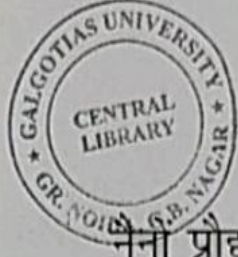


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भारतीय मानक

नैनो प्रौद्योगिकी — शब्दावली

भाग 1 कोर शब्दावली

Indian Standard

NANOTECHNOLOGIES — VOCABULARY

PART 1 CORE TERMS

ICS 01.040.07; 07.030

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Group 2

Nanotechnologies Sectional Committee, MTD 33

NATIONAL FOREWORD

This Indian Standard (Part 1) which is identical with ISO/TS 80004-1 : 2010 'Nanotechnologies — Vocabulary — Part 1: Core terms' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Nanotechnologies Sectional Committee and approval of the Metallurgical Engineering Division Council.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear, referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

Indian Standard
NANOTECHNOLOGIES — VOCABULARY
PART 1 CORE TERMS

1 Scope

This part of ISO/TS 80004 lists terms and definitions related to core terms in the field of nanotechnologies. It is intended to facilitate communications between organizations and individuals in industry and those who interact with them.

2 Terms and definitions

2.1

nanoscale

size range from approximately 1 nm to 100 nm

NOTE 1 Properties that are not extrapolations from a larger size will typically, but not exclusively, be exhibited in this size range. For such properties the size limits are considered approximate.

NOTE 2 The lower limit in this definition (approximately 1 nm) is introduced to avoid single and small groups of atoms from being designated as nano-objects or elements of nanostructures, which might be implied by the absence of a lower limit.

[ISO/TS 27687:2008, definition 2.1]

2.2

nanoscience

study, discovery and understanding of matter in the **nanoscale** (2.1), where size- and structure-dependent properties and phenomena, as distinct from those associated with individual atoms or molecules or with bulk materials, can emerge

2.3

nanotechnology

application of scientific knowledge to manipulate and control matter in the **nanoscale** (2.1) in order to make use of size- and structure-dependent properties and phenomena, as distinct from those associated with individual atoms or molecules or with bulk materials

NOTE Manipulation and control includes material synthesis.

2.4

nanomaterial

material with any external dimension in the **nanoscale** (2.1) or having internal structure or surface structure in the **nanoscale**

NOTE 1 This generic term is inclusive of **nano-object** (2.5) and **nanostuctured material** (2.7).

NOTE 2 See also **engineered nanomaterial** (2.8), **manufactured nanomaterial** (2.9) and **incidental nanomaterial** (2.10).

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2.5

nano-object

material with one, two or three external dimensions in the **nanoscale** (2.1)

NOTE Generic term for all discrete nanoscale objects.

[ISO/TS 27687:2008, definition 2.2]

2.6

nanostucture

composition of inter-related constituent parts, in which one or more of those parts is a **nanoscale** (2.1) region

NOTE A region is defined by a boundary representing a discontinuity in properties.

2.7

nanostuctured material

material having internal **nanostucture** (2.6) or surface nanostucture

NOTE This definition does not exclude the possibility for a **nano-object** (2.5) to have internal structure or surface structure. If external dimension(s) are in the nanoscale, the term nano-object is recommended.

2.8

engineered nanomaterial

nanomaterial (2.4) designed for a specific purpose or function

2.9

manufactured nanomaterial

nanomaterial (2.4) intentionally produced for commercial purposes to have specific properties or specific composition

2.10

incidental nanomaterial

nanomaterial (2.4) generated as an unintentional by-product of a process

NOTE 1 The process includes manufacturing, bio-technological or other processes.

NOTE 2 See ISO/TS 27628:2007, definition 2.21, for definition of "ultrafine particle".

2.11

nanomanufacturing

intentional synthesis, generation or control of **nanomaterials** (2.4), or fabrication steps in the **nanoscale** (2.1), for commercial purposes

2.12

nanomanufacturing process

ensemble of activities to intentionally synthesize, generate or control **nanomaterials** (2.4), or fabrication steps in the **nanoscale** (2.1), for commercial purposes

2.13

nanoscale phenomenon

effect attributable to **nano-objects** (2.5) or **nanoscale** (2.1) regions

2.14

nanoscale property

characteristic of a **nano-object** (2.5) or **nanoscale** (2.1) region

Bibliography

- [1] ISO/TS 27628:2007, *Workplace atmospheres — Ultrafine, nanoparticle and nano-structured aerosols — Inhalation exposure characterization and assessment*
- [2] ISO/TS 27687:2008²⁾, *Nanotechnologies — Terminology and definitions for nano-objects — Nanoparticle, nanofibre and nanoplate*
- [3] ASTM E2456-06, *Standard Terminology Relating to Nanotechnology*

2) To be revised as ISO/TS 80004-2.

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