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English Version

**Nanotechnologies - Vocabulary - Part 3: Carbon nano-objects
(ISO/TS 80004-3:2010)**

Nanotechnologies - Vocabulaire - Partie 3: Nano-objets en
carbone (ISO/TS 80004-3:2010)

Nanotechnologien - Fachwörterverzeichnis - Teil 3:
Kohlenstoff-Nanoobjekte (ISO/TS 80004-3:2010)

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Foreword

The text of ISO/TS 80004-3:2010 has been prepared by Technical Committee ISO/TC 229 "Nanotechnologies" of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 80004-3:2014 by Technical Committee CEN/TC 352 "Nanotechnologies" the secretariat of which is held by AFNOR.

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Endorsement notice

The text of ISO/TS 80004-3:2010 has been approved by CEN as CEN ISO/TS 80004-3:2014 without any modification.

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Introduction

In the last two decades, various new forms of nanoscale carbon materials, including fullerenes and carbon nanotubes, have been discovered, synthesized and manufactured. These are promising materials for many industrial fields associated with nanotechnologies because of their unique electronic, electromagnetic, thermal, optical and mechanical properties.

In the context of increasing scientific knowledge and a growing number of technical terms in the field of nanotechnologies (see Bibliography), the purpose of this part of ISO/TS 80004 is to define important terms and concepts for carbon nano-objects in a precise and consistent manner, in order to clarify their interrelationship, as well as their relationship to existing terms previously used for conventional carbon materials.

This part of ISO/TS 80004 belongs to a multi-part vocabulary covering the different aspects of nanotechnologies. Most of the definitions in this part of ISO/TS 80004 are deliberately determined so as to be in harmony with a rational hierarchical system of terminology under development for nanotechnologies, although in some cases the hierarchical approach needs to be compromised due to the specific usage of individual terms.

Nanotechnologies — Vocabulary —

Part 3: Carbon nano-objects

1 Scope

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

2 Basic terms used in the description of carbon nano-objects

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

nano-object

material with one, two or three external dimensions in the nanoscale

NOTE Generic term for all discrete nanoscale objects.

[ISO/TS 27687:2008, definition 2.2]

2.3

nanoparticle

nano-object with all three external dimensions in the nanoscale

NOTE If the lengths of the longest to the shortest axes of the nano-object differ significantly (typically by more than three times), the terms nanofibre or nanoplate are intended to be used instead of the term nanoparticle.

[ISO/TS 27687:2008, definition 4.1]

2.4

nanoplate

nano-object with one external dimension in the nanoscale and the two other external dimensions significantly larger

NOTE 1 The smallest external dimension is the thickness of the nanoplate.

NOTE 2 The two significantly larger dimensions are considered to differ from the nanoscale dimension by more than three times.