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

GB/T 33243-2016

**Nanotechnologies -- Characterization of multiwall carbon
nanotube (MWCNT)**

纳米技术 多壁碳纳米管表征

(English Translation)

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Foreword

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

This standard uses the translation method equivalent to the international standard ISO/T R10929..2012 "nano-technology multi-walled carbon nanotube sample characterization".

And the normative reference in this standard international documents are consistent with the relationship between China's documents are as follows.

Nanotechnology terminology - Part 1. Core terminology (ISO/T S80004-1..2011, IDT) GB/T 30544.1-2014.

This standard has made the following editorial changes.

--- international standard name "nano-technology multi-walled carbon nanotube sample representation" to our standard name "nano-technology multi-walled carbon nano Rice tube characterization ".

This standard is proposed by the Chinese Academy of Sciences.

This standard is under the national standard of nanotechnology standardization technical committee (SAC/TC279).

This standard is responsible for drafting units. National Center for Nanoscience.

Introduction

Multi-walled carbon nanotubes (MWWTs) are a kind of nanomaterials used in industrial fields, Has the unique advantages of electrical, electromagnetism, thermal, optical and mechanical properties. Multi-walled carbon nanotubes have a wide range of applications such as field emission Flat panel display, reinforced composite materials, multi-function sensors and new nano-logic circuit components. In all cases, are required for multi-walled carbon nanometers the tubes are characterized in order to prepare the target product.

Characterization of Nanotechnology Multi - walled Carbon Nanotubes

1 Scope

This standard specifies the testing techniques used to evaluate the basic properties and impurity composition of macroclic carbon nanotubes, Industry can achieve the basic characteristics of the test technology.

This standard is applicable to the research, development and commercialization of multi-walled carbon nanotube materials.

The technical content of this standard does not contain specific sample preparation and testing methods.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this article Pieces. For undated references, the latest edition (including all modifications) applies to this document.

ISO/T S27687 Nanotechnology Nanomaterials Terms and definitions Nanoparticles, nanofibers and nanosolts

(Nanotechnologies-terminologyanddefinitionsfor nano-objects-Nanoparticle, nanofibreandnanoplate) ISO/T S80004-1 Nanotechnology terminology - Part 1. Nanotechnologies-Vocabulary-Part 1.

Core terms)

ISO/T S80004-3 Nanotechnology terminology - Part 3. Nanotechnology - Vocabulary -Part 3. Carbon nano-objects)

3 Terms and definitions

The terms and definitions defined in ISO/T S27687, ISO/T S80004-1 and ISO/T S80004-3 are applicable to this document.

4 Abbreviations

The following abbreviations apply to this document.

AAS. Atomic Absorption Spectroscopy (atomicabsorptionspectrometry) DTA. Differentialthermalanalysis EDS. energy spectrum (energy dispersive X-ray spectrum) (energydispersiveX-rayspectrometry) EGA-GCMS. Evolved gas analysis Gas chromatography-mass spectrometry (evolvedgasanalysis-gaschromatographs spectrometry GC-MS. Gas Chromatography-Mass Spectrometry (GC-MS) HPLC-MS. high performance liquid chromatography-mass spectrometry (high-performance liquid chromatography-try ICP-AES/OES. inductively coupled plasma-atomic emission spectroscopy /tomicemissionspectroscopy/opticalemissionspectroscopy) ICP-MS. inductively-coupled plasmicroscopic spectroscopy (ICP-MS) SEM. scanning electron microscopy (scanning electron microscopy) TEM. Transmission Electron Microscopy