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**Nanotechnologies - Characterization of metal and metal-oxide
nano-objects in water - Sample preparation**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is equivalent to ISO /T R20489.2018 "Sample Preparation for Characterization of Metals and Metal Oxide Nano-Objects in Nanotechnology Water Samples"

Preparation Methods". The document type was adjusted from ISO 's technical report to my country's guiding technical document.

This document has made the following minimal editorial changes.

---In order to coordinate with the existing standards, the name of the standard is changed to "Characterization Samples of Metals and Metal Oxide Nano-Objects in Nanotechnology Water Samples"

Product Preparation Methods".

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

Artificial nanoobjects are increasingly used in commercial products such as consumer goods, healthcare products, solar panels, batteries, surface coatings and water treatment.

In larger quantities, these nano-objects will eventually be released into the natural environment, especially water environments. However, the release of man-made nanoobjects into the aquatic environment

Finally, the technical data on its "existence state", "transportation" and "fate" are currently very limited. At the same time, with the current global water supply shortage

As demand for water recycling increases, so do concerns about the potential health effects of man-made nanoobjects in water.

The environmental parameters of the aqueous matrix in which nano-objects are located [such as natural organic matter content, pH, ionic strength (IS), etc.] are very important because they

These parameters may affect the size, final product, stability and chemical composition of the nanoparticles. A water sample containing artificial nano-objects may

It is very complex because it contains a series of nanoparticles with different properties, particle size, reactivity, composition, agglomeration state and shape. therefore

The preliminary preparation process of the sample, such as pretreatment and particle size screening, is very critical for the subsequent analysis of nano-objects. Some studies have listed common

See screening technology.

Although several methods for the detection and characterization of artificial nanoobjects in water matrices are described in ISO /T R18196.2016, these methods

The law is still in various stages of development of technical specifications or standards. More importantly, for artificial nano-objects in water samples, there is currently no

Accepted standards for pre-analytical handling (i.e. collection, storage and particle size sieving). This document facilitates comparison of data between different laboratories

comparison, which will facilitate subsequent research on commercial products containing artificial nanoobjects, thereby ultimately supporting the development of nanotechnology-related industries.

develop.

Nanotechnology metals and metal oxide nanoparticles in water samples

Object Characterization Sample Preparation Methods

1 Scope

This document describes the sample preparation methods (i.e. pretreatment and particle size sieving) used for analytical measurements of samples in water. its system

Preparation methods include sample collection and storage, preconcentration and screening of various analytes.

This document is applicable to surface or drinking water containing corresponding

quantities and types of metal and metal oxide nanoobjects.

2 Normative reference documents

This document has no normative references.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Nanomaterials with specific functions or compositions manufactured for commercial purposes.

[Source: GB/T 30544.1-2014,2.9]

3.2

measured measurerand

The quantity to be measured.

[Source: ISO /IEC Guide99.2007,2.3, modified]

3.3

nano-object nano-object

An object with one, two, or three external dimensions at the nanometer scale.

Note. A general term used for all nanoscale objects that are separated from each other.

[Source: GB/T 30544.1-2014,2.5]

3.4

Materials with nanostructures inside or on their surface.

Note. This definition does not exclude the possibility that nanometer objects (3.3) have internal or surface nanostructures. If the outer dimension(s) are on the nanometer scale degree, the term "nanoobject" is recommended.

[Source: GB/T 30544.1-2014,2.7]

3.5

surface water surface water

Water that flows or remains on the surface of land.

[Source: ISO 13164-1.2013,3.1.20]