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

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**Microbeam analysis - Transmission electron microscopy -
Preparation methods of ultrathin section of polymer
composites**

微束分析 透射电子显微术 聚合物复合材料超薄切片制备方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting is required.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Introduction

When using transmission electron microscopy to observe polymer composites, ultrathin section sample preparation is the key.

The multi-component, multi-phase system with different chemical properties and various reinforcing materials and filling materials has excellent mechanical and other properties.

So far, there is no unified technology for preparing ultrathin sections of polymer composites

under electron microscopy.

In order to standardize the preparation method of electron microscope ultrathin sections of polymer composites, This document is specially formulated.

Microbeam analysis transmission electron microscopy Preparation method of ultra-thin slices of polymer composite materials

1 Scope

This document specifies the method and technical specifications for the preparation of ultrathin section samples of polymer composites for transmission electron microscopy observation.

This document is applicable to the preparation of polymer composite samples that can be ultra-thinly sectioned at room temperature or under freezing conditions.

2 Normative references

GB/T 30544.4-2019

3 Terms and definitions

The terms and definitions defined in GB/T 30544.4-2019 and the following apply to this document.

3.1 polymer

A high molecular weight compound composed of one or several structural units repeatedly connected by covalent bonds.

3.2 Polymer composite material polymercomposite

A multi-component, multi-phase system with polymer as the matrix and various reinforcing materials and filling materials, which has excellent mechanical properties. And other performance.

3.3 Nanoscale

The size range is about 1nm~100nm.

NOTE 1 This size range generally, but not exclusively, exhibits properties that cannot be extrapolated from larger sizes. For these properties, the upper and lower limits of the scale are approximate.

Note 2. The purpose of introducing a lower limit (about 1 nm) in this definition is to avoid the default of a single or small cluster of atoms being a nano-object or nano-structure when no

lower limit is set. unit.

[Source. GB/T 30544.4-2019, 2.1]

3.4 Nanomaterials

Any material whose external dimension, internal or surface structure is at the nanoscale.

NOTE This generic term includes nano-objects and nano-structured materials.

[Source. GB/T 30544.4-2019, 2.3]

3.5 Nanocomposite

A solid mixture consisting of two or more phase-separated materials, one or more of which is a nanophase.