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

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**Surface chemical analysis - Surface characterization -
Measurement of the lateral resolution of a confocal
fluorescence microscope**

表面化学分析 表面表征 共聚焦荧光显微镜横向分辨的测量

(English Translation)

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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 18337:2015 "Surface chemical analysis and surface characterization - lateral resolution confocal fluorescence microscopy".

Measurement".

This document adds a chapter on "Normative References".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Surface Chemical Analysis (SAC/TC608).

Introduction

Confocal fluorescence microscopy (CFM) is a laser scanning confocal microscopy (LSCM) that operates in fluorescence imaging mode, utilizing...

It can obtain fluorescence images of samples. Fluorescence is emitted by molecules or solid lattices during the relaxation process after photon absorption and electronic excitation.

Fluorescence wavelength, intensity, and spectral shape are related to the electronic

structure of materials; therefore, fluorescence spectroscopy and its imaging techniques are valuable for chemical characterization and analysis.

CFM is extremely useful in optical imaging and spectroscopy. Its high spatial resolution is advantageous for analyzing nanomaterials and thin films.

Analysis. Spatial resolution is one of the most important performance indicators of CFM.

Spatial resolution of a technology refers to its maximum distinguishability between two adjacent target objects; manufacturers typically define it in different ways.

This value is characterized. The spatial resolution of CFM is characterized by lateral resolution and axial resolution; the values of these two are different and not necessarily interdependent.

The document provides a convenient and effective method for measuring the lateral resolution of CFM.

Surface chemical analysis and surface characterization Measurement of lateral resolution by confocal fluorescence microscopy

1 Scope

This document describes a method for determining the transverse aspect ratio of confocal fluorescence microscopy (CFM) by imaging objects much smaller than expected to be resolved.

Methods for distinguishing between different types of objects.

2 Normative references

This document has no normative references.

3 Terms and Definitions

The following terms and definitions apply to this document.

Point spread function the response of an imaging system to a point light source or a point object.

Lateral resolution

Measurements that can reliably distinguish compositional changes within the plane of the sample surface or within a plane perpendicular to the axis of the imaging optics.

distance.

Note: See reference [1].

4 Symbols and Abbreviations

The following symbols and abbreviations apply to this document.

FWHM. Half-maximum

NA. Numerical Aperture QD. Quantum Point

5.1 Background Information

Laser scanning confocal microscopy (LSCM) uses a well-focused laser beam to scan a sample and records the light intensity at each pixel to form a microgram.