

ICS 71.040.40

CCS G 04



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

GB/T 43661-2024

**Surface chemical analysis - Scanning probe microscopy - Standards on the definition
and calibration of spatial resolution of electrical scanning probe microscopes(ESPMs)
such as SSRM and SCM for 2D-dopant imaging and other purposes**

表面化学分析 扫描探针显微术 用于二维掺杂物成像等用途的电扫描探针显微镜
(ESPM, 如SSRM和SCM) 空间分辨的定义和校准

(English Translation)

Issued on: March 15, 2024

Implemented on: October 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
1 Scope
2 Normative references
3 Terms and Definitions
4 Symbols and abbreviations
5 Basic Information
6 Sharp edge method to measure SCM lateral resolution
7 Sharp edge method to measure SSRM spatial resolution
Appendix A (Informative) SCM Resolution Measurement Example
Appendix B (Informative) SSRM Resolution Measurement Example
Reference

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.

This document is equivalent to ISO 13083:2015 "Surface chemical analysis scanning probe microscopy for two-dimensional imaging of dopants and other purposes" Definition and calibration of spatial resolution in electrical scanning probe microscopy (ESPM, such as SSRM and SCM).

1 Scope

These two microscopes are widely used in imaging the carrier distribution and measuring other electrical characteristics of semiconductor devices.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document. Vocabulary-Part 2: Terms used in scanning-probe microscopy)

Note: GB/T 22461.2-2023 Vocabulary for surface chemical analysis Part 2: Terminology for scanning probe microscopy (ISO 18115-2:2021, MOD)

3 Terms and definitions

For the purpose of this document, the terms and definitions defined in ISO 18115-2 and the following apply.

3.1 Scanning probe microscopy uses

a conductive probe to measure the electrical properties of materials (e.g. capacitance, resistance, electric field, etc.).

3.2 Contact mode

By adjusting the relative height between the probe and the sample, the probe tip is scanned on the sample surface, and there is always a gap between the probe and the sample. In repulsion.

Note: This mode is divided into constant height mode or constant force mode. [Source: ISO 18115-2:2013, 6.35]

4 Symbols and abbreviations

The following symbols and abbreviations apply to this document. AC. alternating current
DC. Direct current