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

GB/T 28632-2012

**Surface chemical analysis -- Auger electron spectroscopy and
X-ray photoelectron spectroscopy -- Determination of lateral
resolution**

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Foreword

This standard rule according to GB/T 1.1-2009 given draft.

This standard uses the translation method identical with ISO 18516.2006 "Surface chemical analysis - Auger electron spectroscopy and X-ray photoelectron

Determination of lateral resolution spectrum. "

The standard micro-beam analysis by the National Standardization Technical Committee (SAC/TC38) and focal points.

This standard was drafted. Shanghai Measurement and Testing Technology Research Institute, nanotechnology and application National Engineering Research Center.

1 Scope

This standard specifies the Auger electron spectroscopy and X-ray photoelectron spectroscopy method for measuring the lateral resolution under three conditions. Straight edge

Law applies to the lateral resolution is greater than the expected value of the instrument $1\mu\text{m}$. Grid method is suitable for the lateral resolution of the expected value is greater than 20nm , less than

The instrument $1\mu\text{m}$. Golden Island law applies to the lateral resolution is smaller than the expected value of the instrument 50nm .

Appendix A, Appendix B and Appendix C gives an example of the measurement of lateral resolution with FIG.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated edition applies to this article

Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 22461-2008 Surface chemical analysis - Vocabulary (ISO 18115.2001, IDT)

3.1 Terms and Definitions

GB/T 22461-2008 defined and the following terms and definitions are applicable to this document.

3.1.1

Lateral resolution resolution, lateral

In the sample surface or a plane within the imaging plane at right angles to the optical axis can be trusted when the composition change region determined points tested distance.

Note 1. The selected plane should be described.

Note 2. In practice, the lateral resolution can be recognized as follows. Strength (i) on a very small sample of the emission points emit distribution half width (FWHM) or (i) along the sample

When the product signal and to distinguish between nature and contain well-defined part of a step function line scan, the intensity of between 12% and 88% points

The distance of the Gaussian intensity distribution, the two values are equal. To other distribution, the choice of the other parameters may be more appropriate. For stairs

The distance between the function of scan line spectrum often applied strength distance between 20% and 80% points or 16% and 84%, two points on the Gaussian distribution

Function, the latter pair of the 2sigma width.

GB/T 22461-2008, the definition 5.255

Note 3. For the purposes of this standard, the preferred plane measurement sample.

3.2 Symbols and abbreviations

AES --- Auger electron spectroscopy;

d --- is incident on the sample surface of the electron beam (axial symmetry) beam diameter;

FWHM --- the maximum height of the full width at half (the half-width);

XPS --- X-ray photoelectron spectroscopy;

chi --- lateral resolution required for the measurement parameter; lateral resolution of the measurement starts at the maximum signal strength chi%, at the end of the letter

Maximum signal strength (100-chi)% in delta under (50) case, chi 25.;

The angle between the incident electron beam or X-ray beam and the surface normal between the upper surface theta --- samples.

GB/T 28632-2012/ISO 18516.2006