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

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Surface chemical analysis -- Auger electron spectroscopy and X-ray photoelectron spectroscopy -- Guide to the use of experimentally determined relative sensitivity factors for the quantitative analysis of homogeneous materials

表面化学分析 俄歇电子能谱和X射线光电子能谱 实验测定的相对灵敏度因子在均匀材料定量分析中的使用指南

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

This standard uses the translation method identical with ISO 18118:2004 "Surface chemical analysis - Auger electron spectroscopy and X-ray photoelectron spectroscopy the experimentally determined relative sensitivity factor in the quantitative analysis of homogeneous material Guide. " Correspondence between the consistency of the standards of international documents and normative references of the following documents.

--- GB/T 22461-2008 Surface chemical analysis - Vocabulary (ISO 18115:2001, IDT);

--- GB/T 21006-2007 Surface chemical analysis - X-ray photoelectron spectroscopy and Auger electron spectroscopy linear intensity scale (ISO 21270:2004, IDT).

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

Introduction

Auger electron spectroscopy (AES) and X-ray photoelectron spectroscopy (XPS) is a surface component sensitive surface analysis techniques to detect deep of typically a few nanometers. Both techniques are given in volume average surface weighted signal analysis. Most of the components of the sample and in the transverse the depth direction has changed. Since difficult to measure any changes in the composition of size and distance changes, often using similar methods into Line quantitative analysis. The simplest homogeneous samples, although this situation is not common, but in order to facilitate the analysis, the sample is generally assumed to be uniform.

This standard provides a measurement and use of AES and XPS quantified experimentally determined relative sensitivity factor analysis of homogeneous material guide.

Surface chemical analysis - Auger electron spectroscopy and X-ray Relative sensitivity photoelectron spectroscopy determined experimentally Factor in a homogeneous material Quantitative Analysis Guide

1 Scope

This standard specifies the Auger electron spectroscopy and X-ray photoelectron spectroscopy quantitative analysis of homogeneous material relative sensitivity factor experiments Measurement and usage guidelines.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

ISO 18115 Surface chemical analysis - Vocabulary (Surfacechemicalanalysis-Vocabulary)

ISO 21270 Surface chemical analysis - X-ray photoelectron spectroscopy and Auger electron spectroscopy intensity scale linear

(Surfacechem-icalanalysis-X-rayphotoelectronandAugerelectronspectrometers-Linearityofintensityscale)

3 Terms and Definitions

Terms and definitions defined in ISO 18115 apply to this document. ISO 18115 in absolute terms and relative sensitivity factors elements yuan Prime sensitivity factors are listed in the definition of 3.1 and 3.2. ISO 18115 future revisions term average due to the relative sensitivity matrix Son and pure elements of the definition of relative sensitivity factors are listed in 3.3 and 3.4.

Absolute elemental sensitivity factors absoluteelementalsensitivityfactor Coefficient of an element. The element with the measured intensity divided by the coefficient, while the atomic concentration of the sample is obtained or atomic fraction of the element.

Note 1: should clearly chosen atom concentration or atomic fraction.

Note 2: The sensitivity of the type used in the calculation and quantitative factors should be consistent with the type of equation and analysis of samples used in the process, for example, a uniform layer of sample or segregation.

Note 3: In order to use the matrix factors or other parameters, the sources should be given the sensitivity factors.

Note 4: The sensitivity factor and the excitation source parameters, energy analyzer parameters and sample in the instrument relative to the orientation related to these components. But also with sensitivity factors the correlation matrix analysis, in the SIMS matrix effect play a major role.

Element relative sensitivity factors relativeelementalsensitivityfactor Proportional to the absolute elemental sensitivity coefficient factors. Select the scale factor so that the peak intensity of the elected element and the specified level transition it is equal to 1.

Note 1: When the selected element and its energy transition, usually used for XPS C1s or F1s, usually used for AES AgM4,5VV.

Note 2: As used type of sensitivity factors should be applied, such as the analysis of homogeneous samples or class segregation layer of the sample.

Note 3: In order to use the matrix factors or other parameters, the sources should be given the sensitivity factors.

Note 4: The sensitivity factor and the excitation source parameters, energy analyzer parameters and sample in the instrument relative to the orientation related to these components. Sensitivity factors also the matrix being analyzed relevant influence plays a major role in the SIMS matrix.