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Surface chemical analysis — Auger electron spectroscopy — Description of selected instrumental performance parameters

Analyse chimique des surfaces — Spectroscopie d'électrons Auger — Description de certains paramètres relatifs à la performance instrumentale

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Symbols and abbreviated terms **1**
5 Description of selected instrumental performance parameters **1**
5.1 Method of analysis 1
5.2 Samples 2
5.3 System configuration 2
5.4 Electron gun cathode 2
5.4.1 Cathode type 2
5.4.2 Cathode lifetime 2
5.5 Lateral resolution and beam current 2
5.5.1 General 2
5.5.2 Method 1 2
5.5.3 Method 2 3
5.5.4 Method 3 3
5.6 Spectrometer intensity performance and energy resolution 3
5.6.1 General 3
5.6.2 Method 1 3
5.6.3 Method 2 4
5.7 Spectrometer energy scale 4
5.8 Spectrometer intensity linearity 4
5.9 Spectrometer response function 4
5.10 Spectrometer parameters 4
5.10.1 Spectrometer aberration 4
5.10.2 Analytical area 4
5.11 Image drift 4
5.12 Vacuum environment 4
Bibliography **5**

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 201, *Surface chemical analysis*, Subcommittee SC 7, *Electron spectroscopies*.

This second edition cancels and replaces the first edition (ISO 15471:2004), of which it constitutes a minor revision with the following modifications:

— addition of a Bibliography;

— minor editorial changes to the text.

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Introduction

Auger electron spectrometers (AESs) and scanning Auger electron microscopes (SAMs) are produced by many manufacturers throughout the world. While the basic principles of the AES analytical method in each instrument are the same, the specific designs of the instruments and the way that performance specifications are provided differ widely. As a result, it is often difficult to compare the performance of instruments from one manufacturer with those from another. This International Standard provides a basic list of items devised to enable all Auger electron spectrometers to be described in a common manner. This International Standard is not intended to replace the manufacturer's specification, which may extend to 30 or more pages. It is intended that, where certain items are contained in that specification, there are agreed and defined meanings to those items.

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Surface chemical analysis — Auger electron spectroscopy — Description of selected instrumental performance parameters

1 Scope

This International Standard specifies the requirements for the description of specific aspects of the performance of an Auger electron spectrometer.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 18115-1, *Surface chemical analysis — Vocabulary — Part 1: General terms and terms used in spectroscopy*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18115-1 apply.

4 Symbols and abbreviated terms

AES Auger electron spectroscopy (also Auger electron spectrometer)

FWHM full width at half maximum

rms root mean square

SAM scanning Auger electron microscope (also scanning Auger electron microscopy)

SEM scanning electron microscope

FL Fermi level

VL vacuum level

NOTE Historically, the kinetic-energy scales of AES instruments have been referred to the VL while XPS or combined AES/XPS instruments have been referred to the FL. Conversion from FL to VL referencing is accomplished by subtracting the spectrometer work function from the electron kinetic energies; an approximate means for doing this, satisfactory for most practical AES and SAM applications, is to subtract 4,5 eV from kinetic energies referred to the FL.

5 Description of selected instrumental performance parameters

5.1 Method of analysis

A short description of the methods used to obtain information from the sample shall be given and the availability (as an option) of other analytical techniques in the system under consideration shall be stated.

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