

ICS 71.040.40

CCS G 04



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

GB/T 30704-2014

**Surface chemical analysis -- X-ray photoelectron spectroscopy
-- Guidelines for analysis**

表面化学分析 X射线光电子能谱 分析指南

(English Translation)

Issued on: June 9, 2014

Implemented on: December 1, 2014

Issued by: Standardization Administration of China

Table of Contents

Preface
Introduction
1 Scope
2 Normative references
3 Terms and definitions
4 Symbols and abbreviations
5 Sample Analysis Overview
6 Sample Characterization
6.1 Overview
6.2 Sample Form
6.3 Material Type
6.4 Sample handling and installation of
6.5 Sample Preparation
7 7 verification instrument
7.1 Overview
7.2 Check the instrument
8 7.3 Instrument Calibration
7.4 Instrument settings
8 Wide spectrum of scanning
8.1 Data Collection
8.2 Data Analysis
9 Narrow scanning
9.1 Overview
9.2 Data Collection
9.3 Data Analysis
10 18 Test Report
References

Foreword

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

This standard uses the translation method identical with ISO 10810:2010 "Surface chemical

analysis - X-ray photoelectron spectroscopy Guide." Correspondence between the consistency of the standards of international documents and normative references of the following documents.

--- GB/T 27025-2008 testing and calibration laboratories General requirements (ISO/IEC 17025:2005, IDT)

--- GB/T 22461-2008 Surface chemical analysis - Vocabulary (ISO 18115:2001, IDT) the standard micro-beam analysis by the National Standardization Technical Committee (SAC/TC38) and focal points.

This standard was drafted. Institute of Chemistry.

Drafters of this standard. Zhaozhi Juan, Liu Fen, Zhao Liang-Zhong, Zhang Xiao Yu.

Introduction

X-ray photoelectron spectroscopy (XPS) has been widely used for surface analysis of materials. The measured core level binding energy and binding energy of various elements

Table control to identify the elements in the sample (except for H, He). Comparison with the data of pure elemental, chemical shifts are based on state may peak

And changes in other parameters to determine. Quantitative information elements obtained from the intensity of the peak in the electronic metering. The use of formulas and equipment manufacturers to provide or relative sensitivity factors and the appropriate software. The measuring instrument can calculate the measured content of the surface layer of each chemical component.

This standard is intended to help the X-ray photoelectron spectroscopy operator for effective and meaningful analysis of typical samples.

Surface chemical analysis X-ray photoelectron spectroscopy Guide

1 Scope

This standard applies to X-ray photoelectron spectroscopy analysis of a representative sample of the operator. This standard helps the operator to complete the entire analyzed Cheng, including sample handling, spectrometer calibration and settings as well as a wide collection scanning spectrum and narrow spectral scanning, and gives quantitative and prepare the final report Suggest.

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/IEC 17025 General requirements for testing and calibration laboratories
(General requirements for the competence of testing and calibration laboratories) ISO 18115-1
Surface chemical analysis - Vocabulary - Part 1. General terms and spectrum of academic
language (Surface chemical analysis - Vocabulary - Part 1.
General terms and terms used in spectroscopy)

3 Terms and Definitions

Terms and definitions defined in ISO 18115-1 apply to this document.

4 Symbols and Abbreviations

The following symbols and abbreviations apply to this document.

AES Auger electron spectroscopy (Auger electron spectroscopy) ARXPS variable-angle
X-ray photoelectron spectroscopy (Angle-resolved X-ray photoelectron spectroscopy) the
amount of the Advisory Committee CCQM substance
(Consultative committee for amount of substance) CRM certified standard (reference)
substance (Certified reference material) EAL effective attenuation length
(Effective attenuation length) FAT fixed energy analyzer (Fixed analyser transmission) FRR
fixed reduction ratio (Fixed retard ratio) FWHM half height width (Full width at half maximum)
IERF intensity/energy response function (Intensity/energy response function) NIST National
Institute of Standards and Technology (National Institute of Standards and Technology) NPL
National Physical Laboratory (National Physical Laboratory) RM standard (reference)
substance (Reference material) RSD remaining (residual) standard deviation
(Residual standard deviation) S/N noise ratio (Signal to noise ratio) XPS X-ray photoelectron
spectroscopy (X-ray photoelectron spectroscopy)