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

Analyse chimique des surfaces — Spectroscopie de photoélectrons par rayons X — Lignes directrices pour l'analyse



Reference number ISO 10810:2010(E)

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Foreword

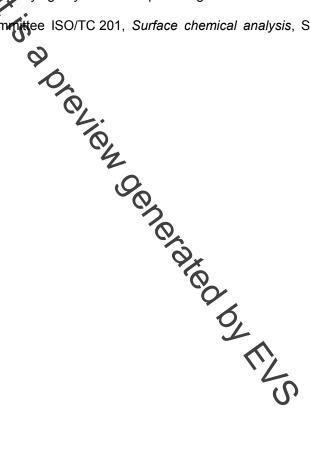
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ISO 10810 was prepared by Technical Committee ISO/TC 201, *Surface chemical analysis*, Subcommittee SC 7, *X-ray photoelectron spectroscopy*.



Introduction

X-ray photoelectron spectroscopy (XPS) is used extensively for the surface analysis of materials. Elements in the sample (with the exception of hydrogen and helium) are identified from comparisons of the measured binding energies of their core levels with tabulations of those energies for the different elements. Their chemical states may be determined from shifts in peak positions and other parameters compared with the data for that element in its pure elemental state. Information on the quantities of such elements can be derived from the measured intensities of photoectron peaks. Calculation of the quantities of the constituent chemical species present in the surface layer studied may then be made using formulae and relative-sensitivity factors provided by the spectrometer manufacturer or locally measured relative-sensitivity factors and appropriate software.

This guidance document intended to aid the operator of X-ray photoelectron spectrometers to obtain efficient,

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

1 Scope

This International Standard is intended to aid the operators of X-ray photoelectron spectrometers in their analysis of typical samples. I Wakes the operator through the analysis from the handling of the sample and the calibration and setting-up of the spectrometer to the acquisition of wide and narrow scans and also gives advice on quantification and on preparation of the final report.

2 Normative referend

The following referenced documents are indispensible for the application of this document. For dated references only the cited edition applies. For undated references, the latest edition of the referenced document (together with any amendments) applies.

ISO/IEC 17025, General requirements for the competence of testing and calibration laboratories

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 International Standard, the terms and definitions given in ISO 18115-1 apply. tenerated by FLS

4 Symbols and abbreviations

- AES Auger electron spectroscopy
- ARXPS angle-resolved X-ray photoelectron spectroscopy
- CCQM consultative committee for amount of substance
- CRM certified reference material
- FAL effective attenuation length
- FAT fixed analyser transmission
- FRR fixed retard ratio
- FWHM full width at half maximum
- **IERF** intensity/energy response function
- NIST National Institute of Standards and Technology
- NPL National Physical Laboratory
- RM reference material
- RSD residual standard deviation
- S/N signal-to-noise ratio