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Australian Standard®

Surface chemical analysis—Vocabulary

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- Australian Institute of Physics
- CSIRO Energy Technology
- Department of Defence (Australia)
- Department of Natural Resources and Mines Qld
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- Curtin University of Technology
- La Trobe University
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- The University of New South Wales
- The University of Queensland
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PREFACE

This Standard was prepared by the Standards Australia Committee CH-016, Spectroscopy.This Standard is identical with, and has been reproduced from ISO 18115:2001, *Surface chemical analysis—Vocabulary* and its Amendment 1(2006) which has been added to the end of the document.

The objective of this Standard is to ensure that the terms and definitions used in surface analytical techniques describe clearly the same concepts and facilitate the exchange of information by establishing the use of the correct terms and their definitions.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text 'this International Standard' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

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INTRODUCTION

Surface chemical analysis is an important area which involves interactions between people with different backgrounds from different fields. Those conducting surface chemical analysis may be materials scientists, chemists or physicists and may have a background that is primarily experimental or primarily theoretical. Those making use of the surface chemical data extend beyond this group into other disciplines.

With the present techniques of surface chemical analysis, compositional information is obtained for regions close to a surface (generally within 20 nm) and composition-versus-depth information is obtained with surface analytical techniques as surface layers are removed. The surface analytical techniques covered in this International Vocabulary extend from electron spectroscopy and mass spectrometry to optical spectrometry and X-ray analysis. Concepts for these techniques derive from disciplines are widely ranging as nuclear physics and radiation science to physical chemistry and optics.

The wide range of disciplines and the individualities of national usages have led to different meaning being attributed to particular terms and, again, different terms being used to describe the same concept. To avoid the consequent misunderstandings and to facilitate the exchange of information, it is essential to clarify the concepts, to establish the correct terms for use and to establish their definitions.

The work for ISO 18115 started with a consideration, *inter alia*, of ASTM E 673-95a, *Standard terminology relating to surface analysis*, and a number of terms retain this reference. Such definitions have remained essentially unchanged. Some editorial changes have had to be made in all the cases where this reference appears since the ASTM definition structure differs from that adopted by ISO. Some other terms from the ASTM standard also appear, but with a revised text or significantly revised meaning. These terms are not referenced to the ASTM standard.

The terms are given in alphabetical order, classified under three headings:

Clause 4: Definitions of the surface analysis methods.

Clause 5: Definitions of terms for surface analysis.

Clause 6: Amendment 1—Definitions of supplementary terms for surface analysis.

Additional terms, important for surface analysis, are given in an extract from IEC 60050-111 in Annex A.

A single alphabetical index is given after the Bibliography. To assist retrieval, compound terms may be found in the index in both natural and reverse word order.

As standards are formulated by Technical Committee ISO/TC 201, *Surface chemical analysis*, new terms are defined. It is intended that these terms will be grouped conveniently into a supplement or supplements to be used with this Standard, until such time as this Standard needs to be revised when they will be incorporated.

AUSTRALIAN STANDARD

Surface chemical analysis — Vocabulary

1 Scope

This International Standard defines terms for surface chemical analysis.

2 Abbreviations

AES	Auger electron spectroscopy
CDP	compositional depth profile
CMA	cylindrical mirror analyser
eV	electron volt
EELS	electron energy loss spectroscopy
EIA	energetic-ion analysis
EPMA	electron probe microanalysis
ESCA	electron spectroscopy for chemical analysis
FABMS	fast atom bombardment mass spectrometry
FWHM	full width at half maximum
GDS	glow discharge spectrometry
GDOES	glow discharge optical emission spectrometry
GDMS	glow discharge mass spectrometry
HEISS	high energy ion-scattering spectrometry
HSA	hemispherical sector analyser
IBA	ion beam analysis
LEISS	low-energy ion-scattering spectrometry
MEISS	medium-energy ion-scattering spectrometry
ptp	peak-to-peak
RBS	Rutherford backscattering spectrometry
RFA	retarding field analyser