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Australian Standard®

Surface chemical analysis—Information format for static secondary-ion mass spectrometry

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- Australian Institute of Physics
- CSIRO Energy Technology
- Department of Defence (Australia)
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- Curtin University of Technology
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- The University of New South Wales
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Surface chemical analysis—Information format for static secondary-ion mass spectrometry

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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 22048:2004, *Surface chemical analysis—Information format for static secondary-ion mass spectrometry*.

The objective of this Standard is to provide a digital format to store and transfer between computers, in a compact way, important calibration and instrumental-parameter data necessary to make effective use of spectral-data files from static SIMS instruments.

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.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard ISO		*Australian Standard* AS ISO	
14976	Surface chemical analysis—Data transfer format	14976	Surface chemical analysis—Data transfer format

The term 'informative' annex has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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INTRODUCTION

ISO 14976 provides a digital data transfer format for surface chemical analysis. That format provides basic information about the data acquisition, but data required for calibration does not specifically include certain detailed aspects necessary to interpret static secondary-ion mass spectrometry (static SIMS) data. That format also contains the spectral data and information about the abscissa increment and its value in the spectrum. Additional data, such as the mass scale calibration data are assembled into information packages with a defined format to be transmitted either within a file conforming to ISO 14976 or separately. In this way, information formats for AES and XPS have been defined in ISO 14975[1]. For static SIMS, it is important to be able to store and transfer the data, as acquired, for instance using the time-of-flight time scale. Each spectrum then needs associated calibration parameters to convert the time scale to a mass scale, where the mass increment in the spectrum varies with mass. The information format defined here contains these data and can be inserted into the block comment lines of ISO 14976. This format is designed to work with ISO 14976 in such a way that software designed to read the latter functions correctly with this information package added. This International Standard is therefore supplementary to and compatible with ISO 14976. The format is also compatible with ISO 14975 and follows a similar structure.

AUSTRALIAN STANDARD

Surface chemical analysis — Information format for static secondary-ion mass spectrometry

1 Scope

This International Standard provides a digital format to store, and transfer between computers, in a compact way, important calibration and instrumental-parameter data necessary to make effective use of spectral-data files from static SIMS instruments. This format is designed to supplement the data transfer format specified in ISO 14976.

2 Normative references

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

ISO 14976, *Surface chemical analysis — Data transfer format*

3 Terms, definitions and conventions

For the purposes of this document, the terms and definitions given in ISO 14976 and the following terms and definitions apply, as well as the convention, stated at the end of this clause, concerning the use of the decimal sign.

3.1
package
set of text lines which describes information about spectral data

In conformance with common usage, the decimal sign is given as a point for all items or examples of verbatim computer entries although, in conformance with the ISO/IEC Directives, Part 2, the decimal sign is given as a comma in the rest of the text.

4 Symbols (and abbreviated terms)

A ToF calibration coefficient

a calibration coefficient for the term x^2 in Equation (4)

b ToF calibration coefficient

β calibration coefficient for the term x in Equation (4)

γ calibration constant in Equation (4)

E ion energy in the flight path of a mass spectrometer, in electron volts