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ISO 18118

Third edition
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Surface chemical analysis — Auger electron spectroscopy and X-ray photoelectron spectroscopy — Guide to the use of experimentally determined relative sensitivity factors for the quantitative analysis of homogeneous materials

Analyse chimique des surfaces — Spectroscopie des électrons Auger et spectroscopie de photoélectrons — Lignes directrices pour l'utilisation de facteurs expérimentaux de sensibilité relative pour l'analyse quantitative de matériaux homogènes

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This document was prepared by Technical Committee ISO/TC 201, *Surface chemical analysis*, Subcommittee SC 7, *Electron spectroscopies*.

This third edition cancels and replaces the second edition (ISO 18118:2015), which has been technically revised.

The main changes are as follows:

- The main equation for the use of sensitivity factors for analysis has been moved from Annex A to the main text
- Defined symbols and abbreviated terms from the Annexes have been consolidated to Clause 4.
- Several terms have been modified for formatting purposes, and some have been removed due to no longer being required.
- Several formulae have been removed from Annex A and replaced by references to formulae and databases of parameters that are more accurate. Such databases are now the recommended source for the parameters calculated using the removed formulae.
- Annex A has been redefined as an informative Annex.
- Multiple small additions have been made to provide new and updated sources for information.
- Editorial changes have been made throughout.

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Auger electron spectroscopy (AES) and X-ray photoelectron spectroscopy (XPS) are surface-analytical techniques that are sensitive to the composition in the surface region of a material to depths of, typically, a few nanometres (nm). Both techniques yield a surface-weighted signal, averaged over the analysis volume. Most samples have compositional variations, both laterally and with depth, and quantification is often performed with approximate methods since it can be difficult to determine the magnitude of any compositional variations and the distance scale over which they can occur. The simplest sample for analysis is one that is homogeneous. Although this situation occurs infrequently, it is often assumed, for simplicity in the analysis, that the sample material of interest is homogeneous. This document provides guidance on the measurement and use of experimentally determined relative sensitivity factors for the quantitative analysis of homogeneous materials by AES and XPS.

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