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HAXPES spectra and quantification of bulk W and WSe₂ compound

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The HAXPES spectra of bulk W and WSe₂ compounds obtained with Cr K α_1 excitation ($h\nu=5414.8$ eV) are presented. Cr K α HAXPES allows to ionize all W and Se core-levels of principal quantum numbers $N=2, 3$ and 4 .

We emphasize aspects related to binding energy scale correction – which can no longer rely on the C 1s line- and peculiarities of some HAXPES core-level spectra, such as the W 4f core-level spectrum, compared to the XPS case [1].

The quantification procedure will be presented. It is based on empirically determined sensitivity factors (RSFs) provided by the PHI Multipak software version 9.9.0.8, from the most recently released RSF database. The RSFs were derived from the pure-element relative sensitivity factors as defined in ISO 18118:2015 [2] which were measured on pure element samples using a Cr K α source.

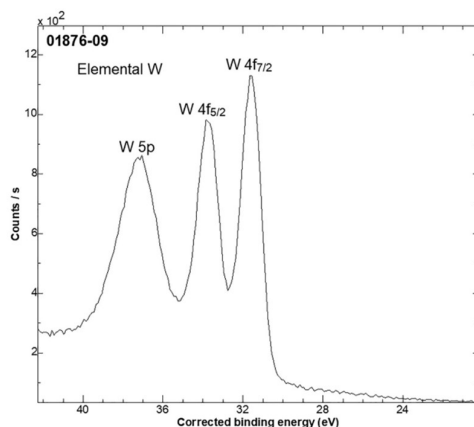


Fig.1- Cr K α HAXPES core-level spectrum of W 4f. [1]

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References

[1] P.-M. Deleuze, N. Gauthier, E. Martinez, K. Artyushkova and O. Renault, *Surf. Sci. Spectra* **30**, 024029 (2023).

[2] International Organization for Standardization 2015, 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, ISO 18118:2015.