

## **Analysis of Photoemission Data. A Tutorial.**

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Among the several photoemission-based techniques, X-ray photoelectron spectroscopy is particularly suitable for investigating a broad range of materials and can provide valuable and quantitative information about the elemental composition of surfaces and interfaces.

The capability to unravel the chemical composition of surfaces and interfaces is a key element of this technique, but sometimes the interpretation of the outcomes of the experiment can be hard and non-straightforward, and lead to incorrect results.

In this tutorial lecture, I will review some essential methodologies for an effective and meaningful data analysis in core-level photoelectron spectroscopy experiments. In particular, after sketching the basics of the photoemission process, I will show some strategies to extract the information from core-level spectra, with a specific attention to synchrotron-based experiments. I will discuss the different types of backgrounds, core-level lineshapes and satellite structures. Some relevant case studies will be presented and explained, together with some strategies useful in data interpretation for synchrotron-based core-level photoelectron spectroscopy.