

Current Problems in the Quantization of the XPS

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When we use x-ray photoelectron spectroscopy to analyze the various kinds of sample(alloy, thin film, compounds, etc.), the most frequent question to be answered is "what is it?". This problem is not a serious one since all the elements have been tabled to give direct information on the species in it. Even in case of low concentration, there are several other techniques for this purpose. If this problem can be answered, the following questions will be the quantity of each component and its chemical state. In this talk, we will confine ourselves to the problem of the quantization of spectrum in XPS.

There are three possible factors to affect the quantization of the XPS spectrum. First, electron optics is one of the important factor determinig the quantization of the spectrum. This includes the instrumental parameters and alignment of the sample. Second, sample treatment is also important factor. In addition to the surface cleaning procedure, sample heating and cooling will also affect the spectrum itself. And the third is the ways of spectrum analysis. This means the manipulation of the spectrum. Smoothing, background subtraction and deconvolution are important factors for the determination of the quantity. This part needs more care by the expert when it needs to be done. We will show several types of different samples as an example to show some critical factors in determining the quantity.