XPS: a Powerful Tool for Understanding Functional Materials

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Functional materials make it possible to solve some of the most critical challenges of the current era, from energy to biomedical applications. To design and develop the most suitable materials, a deep understanding of their properties is therefore essential. The surface of materials is particularly important because it represents the interactive boundary between the material itself and other interacting substances and thus profoundly determines the behavior of a material. X-ray photoelectron spectroscopy (XPS) has emerged as a valuable tool for characterizing the chemical and physical properties of a material's surface.

In this contribution we will present a series of case studies developed in recent years in our XPS laboratory, including molecular[1-2], carbon-based[3] and inorganic[4-9] materials for applications ranging from spintronics to sensing and catalysis. The intent is to show the versatility and utility of XPS in the broad field of materials science.

References:

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