

# **High resolution hard X-ray photoelectron spectroscopy of genuine bulk electronic structures of 3d (V, Cr) and 4f (Yb) strongly correlated compounds**

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Hard X-ray photoelectron spectroscopy above several keV makes us overcome the surface sensitivity of conventional photoelectron spectroscopy. As well known nowadays the genuine bulk electronic structures in many strongly correlated electron systems are much different from surface electronic structures.<sup>1-4)</sup> Although the total energy resolution is limited either by low photoionization cross sections at high  $h\nu$  and/or by the energy resolution of photon monochromators, bulk sensitivity is quite essential to the study of strongly correlated electron systems. Here we discuss the potential of hard X-ray photoelectron spectroscopy (HAXPES) in the region of 8 keV applied to the study of 3d and 4d transition metal oxides as well as 4f rare earth systems. The physics of the metal-to-insulator transitions and the Kondo resonance beyond the single impurity Anderson model is discussed.

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