

Energy-Dispersive RIXS

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In X-ray fluorescence analysis, spectra present singular characteristics produced by the different scattering processes. When atoms are irradiated with incident energy lower but close to an absorption edge, scattering peaks appear due to an inelastic process known as Resonant Inelastic X-ray Scattering (RIXS) or X-ray Resonant Raman Scattering (RRS)[1,2]. These RIXS/RRS peak presents a series of particular features; between them, a characteristic long-tail spreading to the region of lower energy. It has been recently observed that, hidden on this tail, there is valuable information about the local environment of the atom under study. In the last years, several works have reported a particular kind of RIXS measurements for the discrimination, determination and characterization of chemical environments in a variety of samples and irradiation geometries, even in combination with other spectroscopic techniques[3-8]. One of the most important features of the experimental setup reported in these works is the use of an energy dispersive low-resolution spectrometer to obtain high resolution results. In this work, the new methodology to obtain high resolution result from low resolution measurements, so-called EDIXS, is presented. Applications of EDIXS are described. Different non-conventional configurations, such as grazing incident/emission setups, micro-analysis, etc. are showed. Finally, the first test measurements using a conventional x-ray tube for characterizing oxidation states using EDIXS are presented.

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