Combination of surface plasmon resonance and X-ray absorption spectroscopy: SPR-XAS setup

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Abstract

We present an experimental system to combine surface plasmon resonance and X-ray absorption spectroscopy: SPR-XAS setup [1,2]. The system allows the study of the interaction between electromagnetic radiation and matter using one type of radiation to modify the material and the other one as a probe, performing the study in real time and *in situ*. The surface plasmons, measured under the Kretschmann-Raether configuration [3], can be used to monitor *in situ* changes induced by the X-rays in the metallic film, the substrate and the top dielectric medium [4,5]. Similarly, the changes in the electronic configuration of the material when surface plasmons are excited can be measured by X-ray absorption spectroscopy [1]. The resolution of the system allows observing changes in the signals of the order of 10^{-3} to 10^{-5} depending on the particular experiment and used configuration. The device has been mounted at the SpLine BM25 beamline at ESRF in Grenoble, France, and it is currently available for experiments.

References

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