

ID20 beam line at ESRF: RIXS applications to spin-orbit Mott insulators

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In the frame of the ESRF Upgrade Phase I, the UPBL06 project aimed at the construction of a state-of-the-art hard inelastic x-ray scattering (IXS) beam line on undulator port ID20. The beam line is operational since October 2013, and is fully dedicated to the study of electronic and magnetic excitations in condensed matter. Scientific goals comprise the investigation of strongly correlated electron systems, functional materials, and chemical reactions in liquids and gases. The beam line hosts two spectrometers: one dedicated to resonant IXS studies and one optimized for investigations by x-ray Raman scattering (XRS). We will briefly outline the optical concept of the beam line, present the key characteristics of the two spectrometers, and illustrate the current capabilities by the most challenging experiments recently performed on the instruments. In particular, we will present RIXS applications to iridates, so-called spin-orbit Mott insulators which recently attracted a lot of attention because of their intriguing physical properties [1] and similarities to cuprates [2]. Specifically, I will show how RIXS was used to characterize the ground state of CaIrO_3 [3] and the magnetic excitation spectrum of $\text{Sr}_3\text{Ir}_2\text{O}_7$ [4].

References

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