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SWIFT: the new Quick-EXAFS flagship beamline for Diamond-II

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SWIFT: the new Quick-EXAFS flagship beamline for Diamond-II

SWIFT (Spectroscopy Within Fast Timescales) is a beamline dedicated to operando X-ray Absorption Spectroscopy, selected as one of the new flagship instruments that will be added to the present beamline portfolio at Diamond Light Source. The beamline is expected to take users shortly after the Diamond-II upgrade, in December 2029. Profiting from the opportunities provided by the Diamond-II lattice, the SWIFT source will be placed in one of the newly created straight sections. The source will be a multipole wiggler source. This, in combination with a LN₂-cooled, Quick-EXAFS monochromator and high throughput detectors will allow the acquisition of EXAFS data on samples under operation conditions at fast pace, also in the case of dilute systems that need fluorescence detection acquisition mode. The beamline design includes two experimental end-stations, with one experimental hutch dedicated to 'bulk samples' and a second hutch providing a small focus for the analysis of samples that require fine spatial resolution. Both end-stations will provide infrastructure for catalysis experiments and are designed to host complex sample environments. Specific developments are planned for the development of the controls, data acquisition and analysis software stack, including integration of ancillary instrumentation to support effectively the acquisition of time-resolved experiments.

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