

Single pulse XAS measurements at ID24 and the HPLF project

R. Torchio¹, N. Sevelin Radiguet¹, S. Pascarelli^{1, 2} and O. Mathon¹

¹ESRF, 71 Av. des Martyrs, 38640 Grenoble, France

²European XFEL GmbH, Holzkoppel 4, 22869 Schenefeld, Germany
torchio@esrf.fr

The energy dispersive beamline ID24 is optimized for time resolved XAS down to the single bunch (100 ps) scale. This is made possible by the energy dispersive geometry, based on an elliptically curved crystal, that allows for the simultaneous measurement of the whole absorption spectrum, and by the development of the fast XH detector (carried out in collaboration with STFC Daresbury laboratory, UK).

This ultimate resolution is required to perform dynamic compression experiments induced by powerful ns lasers, whose interest is driven by planetary, fundamental and material science.

First proofs of principle carried in the 2014-2018 years had an important echo in the community and finally triggered the launching of the High Power Laser Facility (HPLF) project at the ESRF. This two phases project foresees the installation of a 100J laser on beamline ID24 in 2020 to perform dynamic compression experiments. This experimental station, named HPLF-I will be open to users in January 2021. In the second phase (HPLF-II, from 2023) the laser might be shared with an adjacent beamline to extend the applications to time resolved XRD, XRI and XES.

In this talk, details about the beamline will be presented as well as its evolution within the EBS upgrade with particular focus on the HPLF project.

