



Contribution ID: 26

Type: Contributed poster

Towards time-resolved RIXS@FLASH at the PG1 monochromator end-station

Monday, June 25, 2018 6:45 PM (15 minutes)

The XUV double stage Raman spectrometer is a permanent experimental end-station at the PG1 monochromator beamline at the free-electron laser FLASH at DESY in Hamburg, Germany [1,2]. This unique instrument is designed to cover the photon energy range from 20 to 200 eV with high energy resolution of about 2–20 meV (design values in additive mode) and to suppress the elastic line and stray light.

Currently, the transport line for the FLASH1 optical pump-probe laser is being installed at the Raman spectrometer end-station. This upgrade will soon allow time-resolved RIXS experiments at the transition metal M-edges (20 - 210 eV) with an energy resolution ≤ 20 meV (double monochromator) and a time resolution of ≤ 250 fs (FWHM). With such a resolution the double stage Raman spectrometer will provide information about dynamic properties of solid matter approaching the Heisenberg limit. The FLASH1 Pump-Probe laser has a fundamental wavelength of 800 nm. By non-linear optical frequency conversion, the wavelengths 400 nm and 267 nm can be generated for optical pump - XUV probe measurements. The first monochromator stage SP1 with an energy resolution < 60 meV (FWHM) will be available for experiments by end of 2018.

Here, we discuss the implementation of the optical laser in-coupling scheme into the sample chamber, present the controls and diagnostics available for pump-probe RIXS studies, and give an overview of the expected performance parameters.

Contact: Siarhei Dziarzhyski (siarhei.dziarzhyski@desy.de)

[1] Rusydi et al. Phys. Rev. Lett. 113, 067001 (2014)

[2] Dziarzhyski et al. J. Synchr. Rad. 23, 123-131 (2016)

Authors: DZIARZHYSKI, Siarhei (DESY Hamburg); REDLIN, Harald (DESY Hamburg); Dr MANSCHWETUS, Bastian (DESY Hamburg); BEYE, Martin (DESY); WEIGELT, Holger (DESY Hamburg); TEMME, Marc (DESY Hamburg); BRENNER, Günter (DESY Hamburg)

Presenter: BRENNER, Günter (DESY Hamburg)

Session Classification: Poster session