Tentative Parameters for Run 7 at MID

17 November 2019

Photon beam parameters		Comments
Photon energy	7 – 18 keV	5 – 7 keV & 18 – 24 keV possible but need discussion
Pulse energy	~ 1 - 2 mJ	Depending on photon energy
Pulse duration	<100 fs	
Number of pulses per train	1 – 250	Maybe up to 350 (AGIPD limit)
Repetition rate in pulse train	2.2 MHz	1.1 MHz and less also possible. 4.5 MHz upon request
Train repetition rate	10 Hz	
Bandwidth	~10^{-3}	1×10^{-4} or 6×10^{-5} by monochromator
Beamsize on sample	2–2000 µm	nanofocusing ~300 × 300 nm^2 possible
Scattering geometries		
SAXS	3 – 8 m sample-detector distance	
WAXS	3 – 8 m, horizontal detector movement 2θ = 14 - 50°	
Large field of view	~25 cm sample-detector distance, AGIPD sensor moved into sample chamber	
AGIPD detector		
Number of pixels	10^6	4 quadrants, central hole configuration
Pixel size	200 µm x 200 µm	
Max frame rate	Single pulse resolved (4.5 MHz)	Up to 352 pulses within one train
Additional area detectors	ePix (2 x 500 k, 50 µm pixels, 10 Hz)	
X-ray diagnostics		
Intensity and position monitors	Diamond scintillator detector, 10Hz	For mirror feedback stabilizing the beam position
Spectral monitor (transmissive)	0.4 eV resolution, 500 kHz rep rate	Bent diamond single crystal with Gotthard line detector

Tentative Parameters for Run 7 at MID

Sample environments		
Sample holders on goniometer	Hexapods and Huber stages, piezo scanners, adapters implemented upon request	
Sample holder provided by users	Must be mountable on the hexapod. Experiments are possible either under vacuum conditions (windowless) or in air. Discussions with MID staff mandatory!	
Cryostat	He, down to ~10K. Contact MID staff!	
Optical laser system		
SASE2 PP laser		
Wavelength	800 nm (~1 mJ)	A 1064nm/532nm ns laser is available upon request.
Pulse duration	>15 fs	
X-ray Split-Delay Line	Not yet available for users in run 7	

All parameters are subject to change, depending on the commissioning and progress of accelerator and instrument.

Please discuss your experiment with the MID group **before** submitting the proposal:

mid-info@xfel.eu

Further information can be found on the MID webpage:

https://www.xfel.eu/facility/instruments/mid/index_eng.html