

Table 1.2.2 Characteristics (source, optics, beam, environment, acquisition, detection) of the CXS station.

<b>Coherent X-ray scattering (CXS) at EH2</b>	
<b>Source characteristics</b>	
Source size (electron)	928 $\mu\text{m}$ (H) x 23 $\mu\text{m}$ (V) (FWHM)
Source divergence (electron)	25 $\mu\text{rad}$ (H) x 17 $\mu\text{rad}$ (V) (FWHM)
Undulators types	In-air: U27 + 2 revolvers U27 / U35
Undulator parameters	Period: 27 mm (U27) / 35 mm (U35) Length: 1.61 m Minimum gap: 11 mm Magnet material: NdFeB $K_{\text{max}}$ 1.36 (U27) / 2.34 (U35)
Brilliance (ph/s/0.1% BW/mm <sup>2</sup> /mrad <sup>2</sup> /100mA)	10 <sup>20</sup> at 8 keV
<b>Primary Optics</b>	
White beam double mirror (available from January 2013)	Harmonic rejection / pink beam mode Horizontal geometry Incidence angle: 2.6-3.5mrad (0.15°-0.2°) Fixed exit (offset: 3.2 mm) Three horizontal bands: Si / Pd / Pt 1 <sup>st</sup> mirror length: 382mm 2 <sup>nd</sup> mirror length: 500mm
Monochromator	Pseudo channel-cut crystal monochromator (offset: 9.5-10 mm) Water cooled Vertical diffraction plane Symmetric Si (111): 7-24 keV
Secondary source	Vertical and Horizontal: Slits (monochromatic beam)
<b>Focusing Optics</b>	
UHV Transfocator (Be-CRLs)	Geometry: $p_1 = 36$ m; $q_2 = 24$ mm; Lens curvature radius: 300 $\mu\text{m}$ , 200 $\mu\text{m}$
Focused beam size	620 $\mu\text{m}$ (H) x 15.5 $\mu\text{m}$ (V)
OH3ext UHV Be CRLs vessel	Geometry: $p_2 = 54$ m; $q_2 = 7.5$ m; Lens curvature radius: 300 $\mu\text{m}$ , 200 $\mu\text{m}$
Focused beam size	130 $\mu\text{m}$ (H) x 3.1 $\mu\text{m}$ (V)
<b>Beam properties</b>	
Energy range	7-24 keV
Energy resolution	$\Delta E/E = 1.4 \cdot 10^{-4}$ (Si(111))
Flux : ph/s/mm <sup>2</sup> /100mA	1xU27: 1.6 10 <sup>13</sup> @8keV      coherent flux >10 <sup>9</sup> ph/s in 10x10 $\mu\text{m}^2$ 1xU35: 1.6 10 <sup>13</sup> @12keV
<b>Experimental configurations</b>	
Scanning and non-scanning modes	X-ray photon correlation spectroscopy (XPCS) in SAXS, GISAXS and WAXS geometries Coherent X-ray diffraction imaging (CXDI)
<b>Experimental environment</b>	
Cryo SAXS chamber, CDI setup with on-axis microscope, flow cell, Cryo chamber for GIXPCS	
<b>Detector systems</b>	
XPCS	Scintillation counter, APD, MEDIPIX, MAXIPIX 2x2, DI-CCD
CXDI	MAXIPIX 2x2, DI-CCD