SSRF Hard X-ray Micro-focus Beamline Design

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The SSRF hard X-ray micro-focus beamline (BL15U1) is designed in a range from 3.5 to 22.5 keV, and dedicated to hard X-ray microanalysis allowing combination of micro-X-ray fluorescence (μ-XRF), micro-X-ray absorption (μ-XAS), and micro-X-ray tomography. The BL15U1 beamline is equipped with a 25 mm period in–vacuum undulator (minimum gap 6mm) as light source. The first optical element of the beamline is a horizontally deflecting toroidal mirror (M1). A fixed exit and liquid nitrogen cooled double crystal monochromator (DCM) with two sets of Si crystals (Si (111) and Si (220)) is installed between M1 and a KB mirror-pair. The beam size values at sample are 7.5μm (h) ×2μm (v) to 1.5μm × 1.5μm.The flux (@10keV) at sample is 4×10^{12} photons/s (3×10^{11} photons/s in 1.5μm × 1.5μm).

Key word: in-vacuum undulator, μ-XRF, μ-XAS, micro-X-ray tomography