

Physicochemical analysis

Beamline: **BL39XU**

Person in charge: Shunji Goto
Tel: 07915-8-1847
Fax: 07915-8-0830
e-mail: sgoto@spring8.or.jp

Subgroups: X-ray Magnetic Absorption and Scattering
Spectrochemical Analysis
Medical Application

Scientific Applications: Magnetic absorption, Non-resonant magnetic scattering,
Resonant magnetic scattering, Ultra trace elemental analysis,
Threshold XRF spectroscopy,
Trace chemical characterization of liquid drop.

Source Characteristics: In-vacuum-type undulator
 $\lambda_u=3.2\text{cm}$, $N=140$
Tunable range: 5-70keV(Fundamental-5th)
Polarization: Linear
Peak brilliance: $2 \times 10^{19}\text{ph/s/mrad}^2/\text{mm}^2/0.1\% \text{b.w.}(I=100\text{mA})$
Total power: 11kW at 5keV, $K=2.3$
Power density: 470kW/mrad² at 5keV, $K=2.3$

Optics:

Distance from source	Optical element	Function
36m	rotated-inclined double crystal monochromator	monochromatization, high heat load elimination
44m	platinum coated plane mirror	higher harmonics elimination, horizontal deflection

X-rays at sample: Energy range: 5 ~ 20keV
Energy resolution: $\Delta E/E=2 \times 10^{-4}$
Photon flux: 10^{15}ph/s
Beam divergence: $<100\mu\text{rad}$
Beam size: $<1\text{mm}$

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