# Ultrahigh Energy Resolution Resonant Inelastic Soft X-ray Scattering (RIXS)





Electronic properties and magnetism research by RIXS for the solid materials such as hightemperature superconductors, semiconductors, and multiferroics materials

## Beamline properties

Resonant Inelastic X-ray Scattering (RIXS) in soft X-ray regions is available with the world's highest energy resolution

### Method

1. Resonant Inelastic Soft X-ray Scattering (RIXS)

#### Beamline information

| Polarization<br>(Energy range)   | Linear horizontal and vertical<br>(250–2000 eV)<br>Left and right circular (250–1500 eV) |
|----------------------------------|--|
| Beam size at sample position     | 20-800 μm (V)× 1 μm (H)  |
| Beam flux at the sample position | >10 <sup>10</sup> photons/s/ $\mu$ m (V)   |

#### 2D-RIXS Spectrometer

| Energy range                       | 450~1000 eV   |
|------------------------------------|---|
| Total energy resolution (E/ΔE)     | high-resolution mode ~40,000@532.5 eV ~31,000@930 eV Oultrahigh resolution mode ~55,000@532.5 eV ~50,000@930 eV |
| Scattering angle of spectrometer   | $30^{\circ} \le 2\theta \le 150^{\circ}$  |
| Sample holder                      | Scienta Omicron type  |
| Sample Temperature (use liquid He) | ~30 K   |
| Measurement time per spectrum      | ~1h (high-resolution mode)<br>~5h (ultra-high-resolution mode)  |
| Energy range of a RIXS spectrum    | ~10 eV  |
| Spectrometer field of view         | 120 μm  |

**2D-RIXS Spectrometer** Multiple RIXS spectra are measured simultaneously by imaging and position- & resolving the incident X-ray energy in the vertical direction and by spectroscopy of the scattered X-ray emission energy in 2θ the horizontal direction. 2D-RIXS Spectrometer M4 (Imaging) Detector Grating Sample М3 (Focusing) M2 varied-line-spacing plane grating monochromator (Cylindrical) **Entrance Slit** Front end slit APPLE-II type undulator Place the sample where corresponding to the exit slit • Dispersed X-ray exposes to the sample in the vertically

BL web page: https://sites.google.com/jasri-service.jp/bl02u-details-eng/ホーム