

Chapter 2 Beamlines

A total of 48 beamlines have been commissioned and are used for a wide variety of users' experiments and beam diagnoses in 2004. The current beamline lineup is summarized in Tables 2-1 and 2-2, and the x-ray beam characteristics and research areas at each beamline are in Appendix A.

At present 45 beamlines are operated for users' experiments. The beamlines are categorized into three groups according to management:

1. Public beamlines
2. JAERI/RIKEN beamlines
3. Contract beamlines

The public beamlines are open to general users under JASRI's management, and a total of 25 beamlines are operational. The JAERI/RIKEN beamlines are managed by JAERI or RIKEN for their own experiments. Ten JAERI/RIKEN beamlines are in operation and one RIKEN beamline (BL17SU) is being commissioned. The contract beamlines are funded and controlled by other organizations, i.e. universities, industrial companies and research institutes. Nine contract beamlines is operational and one beamline (BL08B2) has started the construction in 2004.

In addition, the SPring-8 facility has two accelerator beamlines (BL38B2 and BL05SS). The beamlines are used for diagnosing the stored electron beams by the JASRI accelerator group.

Table 2-1 SPring-8 beamlines (May 31, 2004).

	Beamline*	Beamline Name	Public Use
Public Beamlines	BL01B1	XAFS	October 1997
	BL02B1	Single Crystal Structure Analysis	October 1997
	BL02B2	Powder Diffraction	September 1999
	BL04B1	High Temperature and High Pressure	October 1997
	BL04B2	High Energy X-ray Diffraction	September 1999
	BL08W	High Energy Inelastic Scattering	October 1997
	BL09XU	Nuclear Resonant Scattering	October 1997
	BL10XU	High Pressure Research	October 1997
	BL13XU	Surface and Interface Structures	September 2001
	BL19B2	Engineering Science Research	November 2001
	BL20XU	Medical and Imaging II	September 2001
	BL20B2	Medical and Imaging I	September 1999
	BL25SU	Soft X-ray Spectroscopy of Solid	April 1998
	BL27SU	Soft X-ray Photochemistry	May 1998
	BL28B2	White Beam X-ray Diffraction	September 1999
	BL35XU	High Resolution Inelastic Scattering	September 2001
	BL37XU	Trace Element Analysis	November 2002
	BL39XU	Magnetic Materials	October 1997
	BL40XU	High Flux	April 2000
	BL40B2	Structural Biology II	September 1999
	BL41XU	Structural Biology I	October 1997
	BL43IR	Infrared Materials Science	April 2000
	BL38B1	R&D (3)	October 2000
	BL46XU	R&D (2)	November 2000
BL47XU	R&D (1)	October 1997	

	Beamline*	Beamline Name	First Beam
JAERI Beamlines	BL11XU	JAERI Materials Science II	October 1998
	BL14B1	JAERI Materials Science I	December 1997
	BL22XU	JAERI Actinide Science II	May 2002
	BL23SU	JAERI Actinide Science I	February 1998
RIKEN Beamlines	BL17SU	RIKEN Coherent Soft X-ray Spectroscopy	September 2003
	BL19LXU	RIKEN SR Physics	October 2000
	BL26B1	RIKEN Structural Genomics I	April 2002
	BL26B2	RIKEN Structural Genomics II	April 2002
	BL29XU	RIKEN Coherent X-ray Optics	December 1998
	BL44B2	RIKEN Structural Biology II	February 1998
	BL45XU	RIKEN Structural Biology I	July 1997
Contract Beamlines	BL08B2	Hyogo BM (Hyogo Prefecture)	under construction
	BL12XU	NSRRC ID (National Synchrotron Radiation Research Center, Taiwan)	December 2001
	BL12B2	NSRRC BM (National Synchrotron Radiation Research Center, Taiwan)	October 2000
	BL15XU	WEBRAM (National Institute for Materials Science)	January 2000
	BL16XU	Industrial Consortium ID/ SUNBEAM-ID (Industrial Consortium)	October 1998
	BL16B2	Industrial Consortium BM/ SUNBEAM-BM (Industrial Consortium)	October 1998
	BL24XU	Hyogo ID (Hyogo Prefecture)	May 1998
	BL32B2	Pharmaceutical Industry (Pharmaceutical Consortium for Protein Structure Analysis)	April 2002
	BL33LEP	Laser-Electron Photon (RCNP, Osaka University)	June 1999
	BL44XU	Macromolecular Assemblies (Institute for Protein Research, Osaka University)	May 1999
Accelerator Beamlines	BL05SS	Accelerator Beam Diagnosis	March 2004
	BL38B2	Accelerator Beam Diagnosis	September 1999

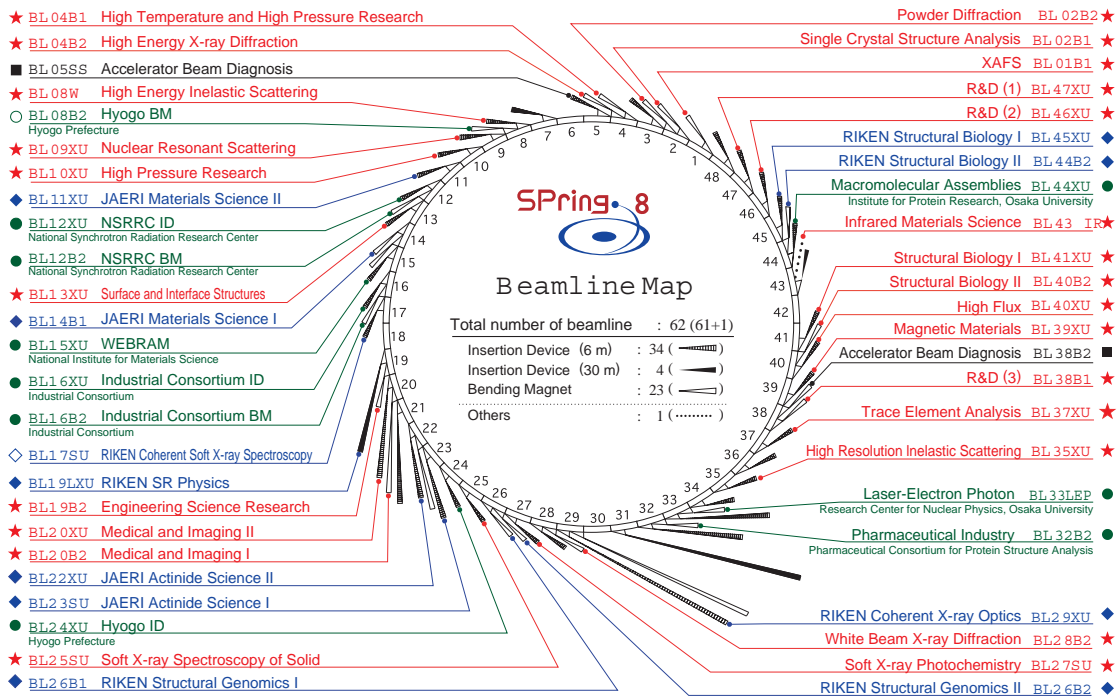
BL: Beamline B1, B2:Bending Magnets XU:X-ray Undulator SU:Soft X-ray Undulator W:Wiggler IR:Infrared Radiation
LEP:Laser-Electron Photon LXU:Long-length Undulator SS:Straight Section

Table 2-2 Status of SPring-8 beamlines.

Beamline	Status				Total
	In Operation	In Commissioning	Under Construction	Under Planning	
Public Beamlines	25	0	0	0	25
JAERI Beamlines	4	0	0	0	4
RIKEN Beamlines	6	1	0	0	7
Contract Beamlines	9	0	1	0	10
Accelerator Beamlines	2	0	0	0	2
Total	46	1	1	0	48

Table2-3 Classification of public beamlines (May 31, 2004).

Method	Field	Beamline			
X-ray Diffraction					
	Powder Diffraction	BL02B2	BL19B2		
	Single Crystal Analysis	BL02B1	BL46XU		
	Surface and Interface Structures	BL09XU	BL13XU		
	High Pressure and High Temperature (Solids, liquids, melts, etc)	BL04B2	BL10XU	BL28B2	
	High Pressure and High Temperature (Earth Minerals)	BL04B1			
Inelastic X-ray Scattering					
	Compton Scattering (Electronic and Magnetic Structures)	BL08W			
	Nuclear Resonant Scattering (Mossbauer Resonance)	BL09XU			
	High resolution Inelastic Scattering (phonon spectrum measurement)	BL35XU			
Magnetic Circular Dichroism and Magnetic Scattering		BL39XU			
XAFS					
	XAFS	BL01B1	BL19B2	BL37XU	BL38B1
	Energy Dispersive XAFS	BL28B2			
Fluorescence Analysis (Trance element Analysis)		BL08W	BL37XU	BL40XU	
Soft X-ray Spectroscopy					
	Photoelectron Spectroscopy of Solids	BL25SU			
	Photochemistry	BL27SU			
Infrared Spectroscopy		BL43IR			
Structural Biology (Protein Crystallography)		BL38B1	BL40B2	BL41XU	
Imaging and Tomography (Medical and Materials Science)		BL20XU	BL20B2	BL28B2	BL47XU
Small Angle Scattering		BL40XU	BL40B2		
Industrial Engineering Researches		BL19B2			



BL: Beamline
 B1, B2: Bending Magnets
 XU: X-ray Undulator
 SU: Soft X-ray Undulator
 W: Wiggler
 IR: Infrared Radiation
 LEP: Laser-Electron Photon
 LXU: Long-length Undulator
 SS: Straight Section

☆ : Public Beamlines
 ● : Contract Beamlines
 ◆ : JAERI or RIKEN Beamlines
 ■ : Accelerator Beam Diagnostic Lines
 ☆ ○ ◇ □ : Planned or Under construction

WEBRAM: Wide Energy range Beamline for Research in Advanced Materials
 NSRRC: National Synchrotron Radiation Research Center

Status	Beamline				Total
	Public Beamlines	Contract Beamlines	JAERI or RIKEN Beamlines	Accelerator Beam Diagnostic Lines	
Operational	25	9	10	2	46
Planned or Under Construction	0	1	1	0	2
Total	25	10	11	2	48

April 1, 2004

Figure 2-1 SPRING-8 beamline map.