

Chapter 1 Introduction

The SPring-8 facility was designed and constructed by the Japan Atomic Energy Research Institute (JAERI) and the Institute of Physical and Chemical Research (RIKEN). After the inauguration in October, 1997, it has been operated by the Japan Synchrotron Radiation Research Institute (JASRI). At present, 48 beamlines are in operation, and among them 25 beamlines are public and open to general users under JASRI's management. These state-of-the-art beamline facilities are shared with the science communities worldwide and contain cutting-edge technologies and instrumentation that are available only in a limited number of synchrotron radiation facilities. Since the inauguration the number of users has been growing and has reached 7,000 in 2003.

In the past two years, JASRI implemented two plans: review of public beamlines and priority research programs. In 2002, JASRI began beamline review for upgrading the beamlines' performance and restructuring their lineup to meet the needs of user communities. Five beamlines are evaluated every year by international review committees, and each beamline is reviewed nearly every five years. In 2003, according to the recommendations from the SPring-8 Review Subcommittee, JASRI launched priority research programs that assign some beam-times to high-priority research fields, highly skilled users (power users) and strategic researches. Under these programs, JASRI is supporting researches for nanotechnology (nanotechnology-related research proposals under the nanotechnology researchers network project of MEXT*), life science (Protein 500 subprogram under the protein 3000 project of MEXT) and industrial applications (Trial Use Program). JASRI is also in partnership with power users for developing new techniques and research fields, upgrading the facilities, and assisting a newcomer (Power Users Program).

In May, 2004, SPring-8 began the top-up operation of the storage ring (see the figures on the cover of this book). In the top-up operation, short-interval injections of electron beams keep the stored current almost constant, delivering two-times higher brilliant x-rays in time-average and bringing further stabilities to optical elements and experimental equipment. This is a milestone in the history of SPring-8 which will widen the choice of beam-filling patterns to meet more users' needs.

This book is compiled for international review committees to learn the current beamline lineup, their performances, research activities. The next chapter presents the current status of the beamlines. Chapters 3 and 4 describe the SPring-8 storage ring operation and the user operations. Chapter 5 gives an overview of the publications at SPring-8. Finally, Appendix A summarizes the experimental stations, and Appendix B lists the publications.

This book was revised and update based on the data as of May 31, 2004

* MEXT: Ministry of Education, Culture, Sports, Science and Technology