

# Experimental Facilities - General -

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## 1. Introduction

The activities of the Experimental Facilities Division in 1996 are summarized as follows:

- public beamline construction,
- R & D on beamline components,
- activities of the Committees on public and contract beamlines,
- activities on Proposal Review Committee,
- international collaboration and workshop,

as well as the public relations to the SR scientists including the SPring-8 Users Society.

The current status of construction of the public beamlines, contract beamlines, JAERI/RIKEN beamlines is described. The activities of JASRI committees are also described.

## 2. Beamline construction

The construction status of insertion devices, front end channels, hutches, transport channel, optics, beamline interlock and R & D on detectors are described in detail in the following sections. A typical beamline construction is as follows. The *in-vacuum* type standard undulators at the SPring-8 were installed at beamlines of BL47XU, BL41XU, BL45XU and BL09XU. The front end components were fabricated and installed at BL47XU, BL02B1 and BL41XU, BL09XU, BL01B1, BL04B1, BL45XU, of which the former two are the pilot beamlines subjected to the radiation security inspection. Optics and station hutches were also built in the experimental Hall. The radiation security inspection passed the beamlines "before commissioning" at the end of February for BL47XU and BL02B1. These beamlines are in the status of beamline commissioning.

In addition to the R&D beamline of BL47XU, ten public beamlines have been constructed to be subjected for public use,

starting in October, 1997 after the installation and adjustment of diffractometers in the experimental stations.

Five contract beamlines at the SPring-8 were accepted for construction. Among these, the multi-purpose beamline (Hyogo) and the supramolecular crystallography beamline (Osaka University) are budgeted this year for the start of construction.

Six beamlines of JAERI and RIKEN have been constructed for the exclusive use by JAERI/RIKEN scientists. Out of these, the RIKEN structural biology beamline 1, on which the small-angle X-ray scattering and bio-crystallography research will be conducted, will be in the commissioning status in parallel to the first public beamlines.

## 3. JASRI Committees

### Beamline Committee

The SPring-8 Project Team is planning to construct public beamlines in the second phase of the Project. This will hopefully be started in 1998. Four public beamlines will be constructed each year ending up with 30 public beamlines by FY2003. The Committee issued a "letter of intent" for beamline construction, followed by a request for "beamline construction proposals". The Committee accepted seven proposals, out of which six were selected to report to the SPring-8 Steering Committee of JAERI, RIKEN and JASRI. A medical research beamline has been budgeted for the start of construction from FY1997, with the aim for research and development in bio-medical imaging. The Committee will continue to select additional public beamlines to be constructed in the following years.

### Contract Beamline Committee

The contract beamlines are being constructed according to the proposals by universities, national laboratories or industries at their expense and is, in principle, solely used for their purposes. The Committee has discussed the feasibility of each beamline

construction based on their proposals. The Committee has approved the start of beamline construction for five proposals, namely,

- Multi-purpose Beamline (Hyogo Pref.)
- Supramolecular Crystallography Beamline (Inst. Protein Res., Osaka Univ.)
- High-Precision Material Science Beamline (Nat'l. Inst. Res. Inorg. Material)
- Sunbeam BM (Industrial Consortium)
- Sunbeam ID (Industrial Consortium).

The former two beamlines were budgeted this year and construction is in progress. The multi-purpose beamline will be ready in FY 1997, while the supramolecular crystallography beamline in FY 1998.

There is an existing plan for an Indian contract beamline, and collaboration between Indian Institutions and SPring-8 has been discussed this year.

#### Proposal Review Committee

By October of this year, ten public beamlines will be operational. The scientific research proposals for the first period of SPring-8 beamline utilization were solicited during October 1995 through March 1996. For this solicitation, 190 scientific subjects were proposed, of which 5 were overseas proposals. A total of 129 subjects (68%) were accepted from the standpoint of adjustment/evaluation requirements of beamlines, as well as from the standpoint of equipment needs at the experimental stations and by the proposed experiments to be conducted in the first stage of beamline utilization. The total number of desired beamtimes (shifts) is sometimes excessively long for some beamlines, five times as long as the actual beamtime scheduled.

The next "request for proposals" of beamline utilization during the period of April to September, 1998, will appear this fall, the deadline for applying will be the beginning of January, 1998.

#### **4. Symposium and Workshop**

In April of 1996 there were two workshops;

the "Three-way Workshop by APS, ESRF and SPring-8," and the "SPring-8 International Workshop on Long Straight Sections of Storage Ring at the SPring-8." These workshops were held at the SPring-8 site (Harima Science Garden City, Hyogo) in succession. The SPring-8 International Workshop is concerned with the evaluation of the storage ring in view of accelerator physics and scientific programs by the use of coherent X-rays coming from the long insertion device. There was also the other workshop entitled "SPring-8 Workshop on Utilization of Beamlines - a Theoretical Point of View" which was held in June 1996 at the SPring-8 site. At this Workshop, discussion was concentrated on the research in material science using SPring-8 high brilliance X-rays.

There was a "school" on SPring-8 utilization given by Indian scientists, held in Indor, India, in November. These classes were designed to provide the understanding of the SPring-8 public beamlines in conducting scientific research programs in the fields of material science and structural biology.

#### **5. SPring-8 Users Society**

The membership of the SPring-8 Users Society is now over 1,000, of which approximately 60% are from universities, 20% from the national laboratories and 20% from industry. The society serves as the nucleus for proposing public beamline construction under subgroup activities. Presently there are 35 subgroups, and several scientists of each subgroup have been engaged in the beamline construction, specifically designing and adjusting diffractometers in the experimental stations, in collaboration with the beamline scientists of Experimental Facilities Division of SPring-8 Project Team and JASRI. The society sends its members to the Beamline Committee, the Contract Beamline Committee and the Proposal Review Committee of JASRI.