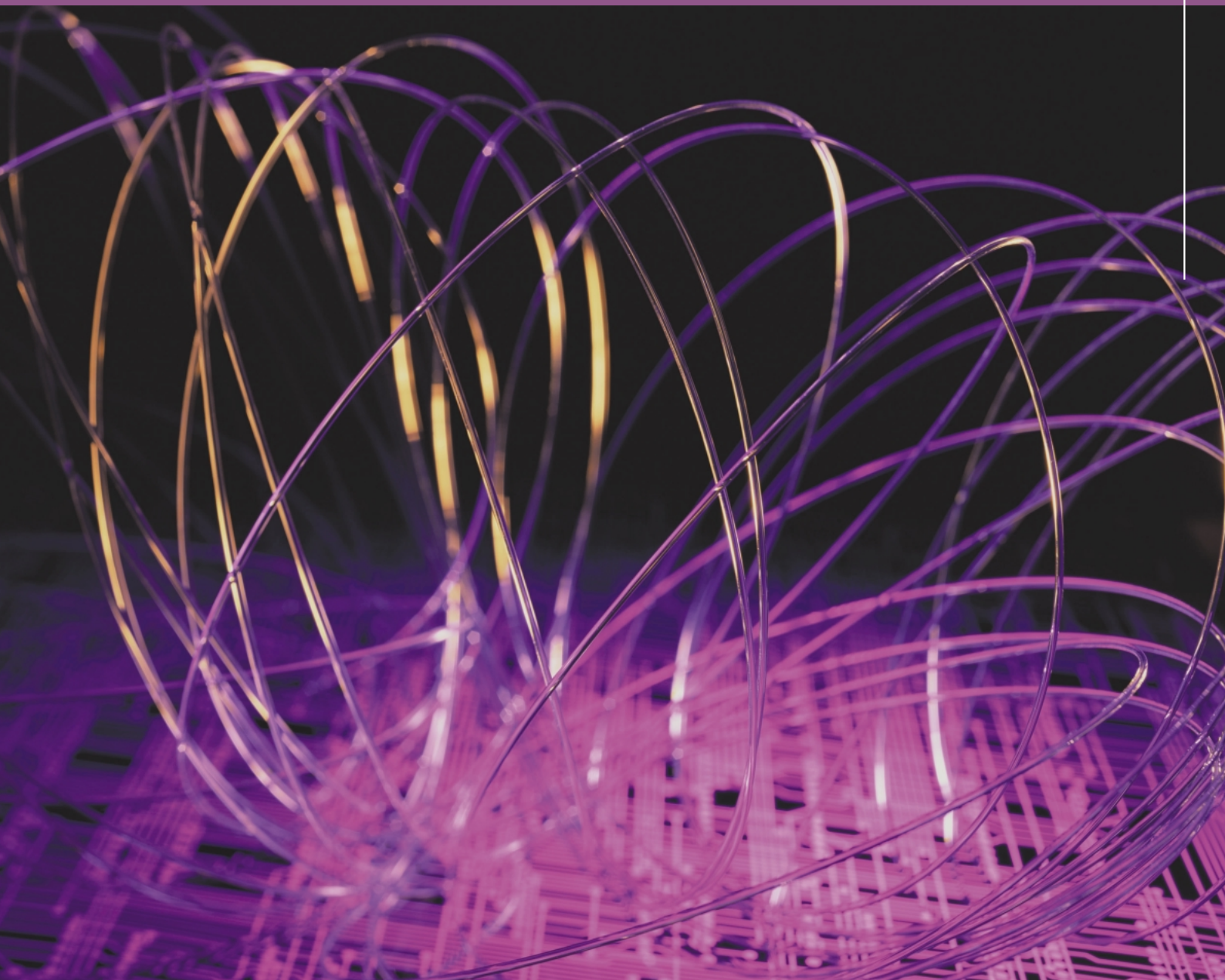


Programs



PROGRAMS

1. Experimental Programs	99
2. Educational Programs	101
3. International Collaboration	102

The PF is a facility accepting experimental proposals from universities and research institutes, irrespective of nationality. Experimental proposals are reviewed by the PF Program Advisory Committee (PF-PAC) and approved by the Advisory Councils for Scientific Policy and Management. The variation in the number of the accepted proposals for the period 1990-2001 is shown in Table 1, where S1/S2, U, G and P stand for : special, urgent, general and preliminary proposals, respectively. It is noted that the number of G-type proposal increased meaningfully in 2001. S-type proposals are divided into two categories, S1 and S2. S1 is a proposal of excellent quality including the construction of beamlines or experimental apparatus, which will serve general users after the completion of the project. S2 is a proposal of excellent quality, which requires full use of synchrotron

radiation and a large amount of beam time. Both S-type proposals, after rigorous refereeing procedures, are supported by the PF from the viewpoint of financial support and availability of beam time. Table 2 summarizes the active S-type projects in FY2001. The whole list of experimental proposals effectual in FY 2002 is available in PART-B of this volume. Proposals are also categorized by five scientific disciplines corresponding to five sub-committees : a) electronic structure, b) structural science, c) chemistry and new materials, d) life science I (protein crystallography) and e) life science II. Figure 1 shows the distribution of the proposals accepted by these sub-committees in FY2001.

In addition to the S, U, G and P proposals, there are two categories reserved for researchers from private companies. They can join collaborative (C-type) proposals

Table 1 Number of proposals accepted for the past decade.

FY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
S1								3	1	0	0	0
S2					1	0	2	1	3	3	2	2
U							2	1	4	2	0	5
G	238	284	298	331	369	365	260	303	333	323	308	346
P			5	13	15	14	10	6	14	22	17	18

Table 2 List of S-type proposals active in FY2001.

Number	Spokesperson	Title
1997S1-002	M. Oshima The Univ. of Tokyo	Formation and new properties of quantum nanostructures
1998S2-003	T. Koide PF	Soft X-ray magnetic circular dichroism study of the electronic and magnetic states of nanometer-scale magnets
1999S2-001	T. Yagi The Univ. of Tokyo	Accurate characterization of the high pressure and high temperature in situ X-ray diffraction study and the physical property of the lower mantle materials
1999S2-002	Y. Itai The Univ. of Tsukuba	In vivo observation of biological soft tissues with phase-contrast method using a separated-type X-ray interferometer
1999S2-003	Y. Amemiya The Univ. of Tokyo	Development and application of X-ray ellipsometry
2000S2-002	M. Ito Himeji Inst. of Tech.	Spin- and orbital-magnetic moment-density distribution of ferromagnets by X-ray magnetic diffraction
2000S2-003	T. Takahashi The Univ. of Tokyo	X-ray diffraction studies on structures and properties of interfaces of metal-semiconductors and insulator-semiconductors
2001S2-002	Y. Murakami Tohoku Univ.	Charge, spin, orbital, and lattice ordering of strongly correlated electron system
2001S2-003	T. Ohta The Univ. of Tokyo	Development of soft X-ray energy dispersive surface XAFS and its application to surface chemistry

with the PF staff members; otherwise, they can submit their own proposals (Y-type). As listed in PART-B, we have 18 C-type proposals and 3 Y-type proposals in FY2001.

Figure 2 shows the variation in the number of registered users in the last 10 years. The total number increased gradually up to 1995, thereafter stayed at a constant value of about 2400, and increases again in FY2001. The temporary decrease in 1997 is due to a long shutdown for the high-brilliance modification of the PF storage ring.

The spokesperson of each proposal is requested to announce when he/she publishes papers or reviews which are based on the experiments carried out at the PF. Those publication are compiled in a database together with publications by PF staff members. A list of publication is found in Appendices and the distribution of the scientific fields is shown in Fig. 3 for the publications of 1996-2001.

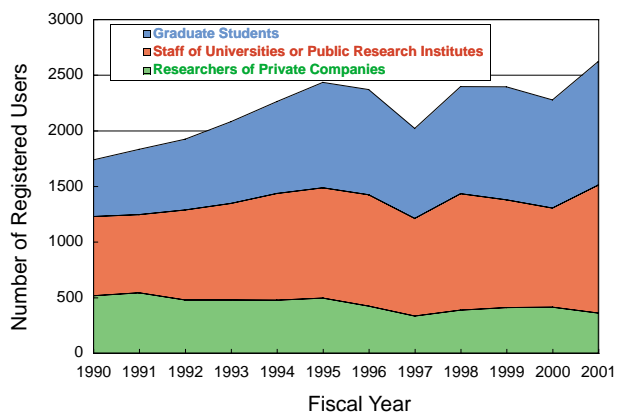


Figure 2
Number of PF users over the period 1990-2001.

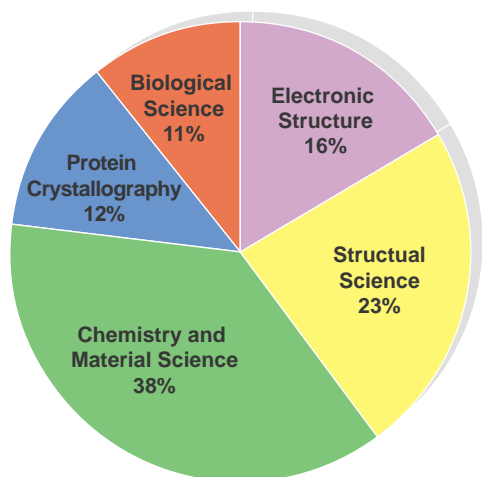


Figure 1
Scientific-field distribution of experimental proposals accepted for FY2001.

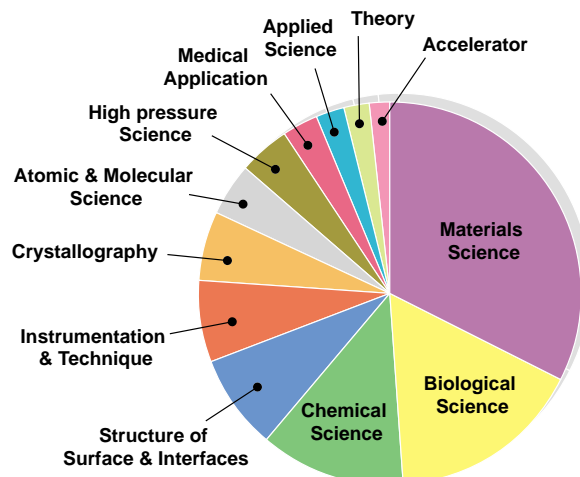


Figure 3
Distribution of publications by scientific fields in 1996-2001.

KEK is one of the basis organizations for the Graduate University for Advanced Studies (GUAS), and contains the Department of Materials Structure Science and the Department of Accelerator Science. Some of the PF staff are in charge of giving lectures and supervising graduate students. There is also a system of Joint Ph. D (JPHD) students, who are accepted by the PF to pursue advanced studies under the supervision of a PF staff member towards their Ph. D degrees in collaboration with their home universities. The numbers of these graduate students during the past decade are shown in Table 3.

In FY2001, three GUAS students, Kazuhiro YAMAZAKI, Mohammed Obaidur RAHMAN, and Hideki NAKAJIMA obtained Ph.Ds. Title of their theses are “Path-integral theory for photoemission spectra of intermediately correlated systems”[1], “Design, Fabrication and Performance of Monolithic Monochromators and its Application for Si and GaAs Lattice Spacing Measurement using Synchrotron Radiation” and “Magnetism of Cr(001) Surface Studied by Spin- and Angle-Resolved Photoelectron Spectroscopy” [2].

In addition to the GUAS and JPHD graduate students, a number of doctoral theses have been written based on the experiments performed at the PF. Figure 4

Table 3 Number of GUAS and JPHD students for the past decade.

FY	GUAS	JPHD
1990	3	2
1991	6	3
1992	4	5
1993	6	9
1994	4	6
1995	4	6
1996	4	4
1997	2	4
1998	3	11
1999	1	5
2000	4	5
2001	4	8

shows the number of graduate students who obtained a doctor degree based on the PF experiments.

References

- [1] M. Yamazaki, N. Tomita and K. Nasu, *J. Phys. Chem. Solids*, **63** (2002) 1579
- [2] H. Nakajima, S. Pukird, W. Suraban, T. Saitoh and A. Kakizaki, *Surf. Rev. Lett.* **9** (2002) 861.

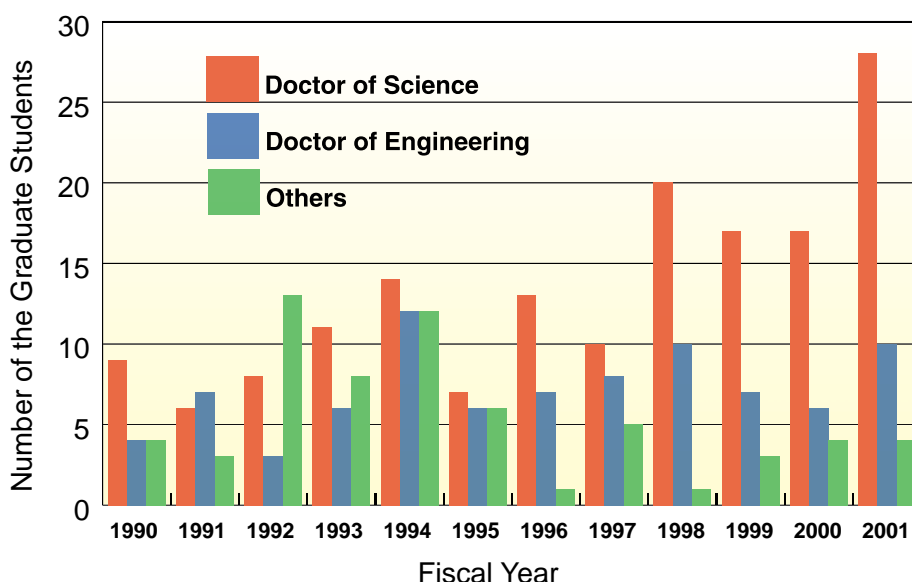


Figure 4
Number of the graduate students who obtained the doctoral degrees based on experiments performed at the PF.

3

International Collaboration

The PF has collaboration programs with the Australian Nuclear Science and Technology Organisation (ANSTO) since 1991. They constructed their own station (Australian National Beamline Facility; ANBF) at BL-20B in 1993 to perform X-ray diffraction and absorption experiments. There are about 50 proposals every year for this beamline, where 120-130 Australian scientists carry out their experiments.

A big collaboration program between Japan and China started in 2000. This covers not only synchrotron-radiation science but also high-energy physics and accelerator technology. Six Chinese Institutes and 10 Japanese organizations including KEK collaborate on many subjects in various ways. KEK and the Institute of High Energy Physics (IHEP) are the “core university” in Japan and China, respectively. Based on this program, exchange of scientists and cooperative research is done with the Beijing Synchrotron Radiation Facility of IHEP, Shanghai National Synchrotron Radiation Center and the National Synchrotron Radiation Laboratory at Hehei.

It should be mentioned that we have accepted about 20 proposals per year from overseas, which is about 7% of the total proposal number, as shown in Fig. 5.

Furthermore, it is noted that these are always a few foreign scientists staying at the PF for 3-12 months with the support of the Ministry of Education, Culture, Sports, Science and Technology and the Japan Society for Promotion of Science.

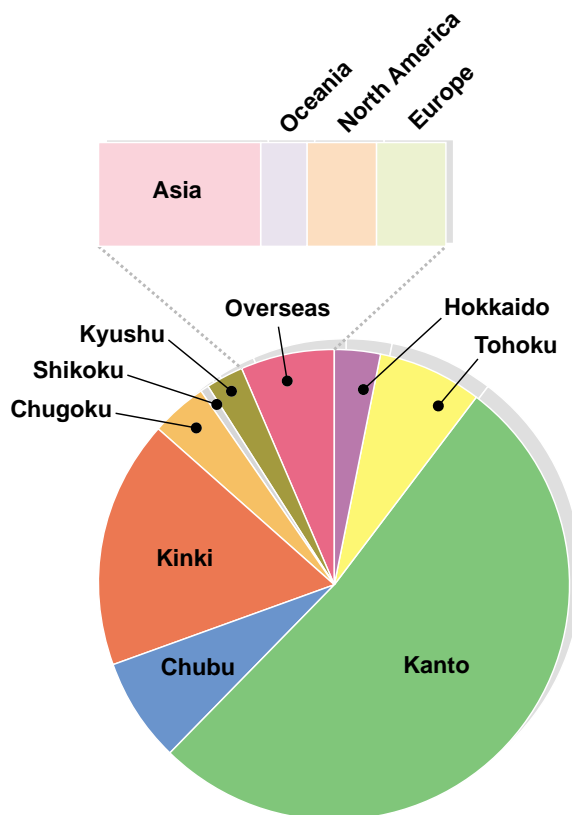


Figure 5
Regional distribution of the spokesperson of proposals accepted for FY2001. Note that proposals for Australian National Beamline Facility (ANBF; BL-20B) are not included.