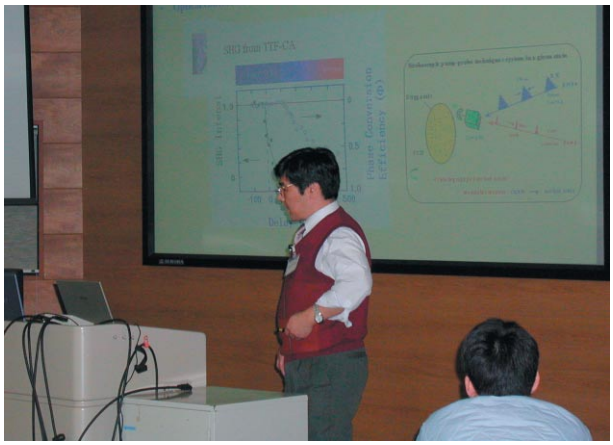
3 Workshops and Seminars

3-1 PF Symposium

The 21st PF Symposium, the annual users' meeting, was held from March 24-25, 2004 at the KEK campus. There were 134 participants including users and PF staff. The main purpose of the PF Symposium is to discuss the present status and future projects of the PF. As well as this, users and the PF staff promote mutual friendship through scientific presentations and discussions. As the first part of the symposium, six members of the PF staff reported the on status and progress of the facility. The most important reports were (1) the 2.5-GeV PF ring will stop operations from March to September 2005 for construction of the straight section improvements and (2) academic cooperating experiments will not be charged for when KEK changes to agency in April, 2004. We invited six speakers for special lectures; five from outside and one from inside PF. An oral session, held to promote closer communication between end users and facility staff was newly held in this symposium and nine speakers presented on four themes. There were 54 poster presentations from users, staff of the accelerators division of KEK and the PF staff.



3-2 PF Workshops

There were five PF workshops held in FY2003 which were approved by the PF Program Advisory Committee (PF-PAC). Anyone can propose such a workshop, in which discussion takes place upon a specific scientific topic in synchrotron radiation and its related fields. The proceedings of the workshops can be found in the KEK proceedings, which are available at the Information Resource Division of KEK.

(1) "Development of Nuclear Resonant Scattering Research Using Synchrotron Radiation" held on October 7, 2003 at the PF. KEK proceedings 2003-17 (in Japanese).

Many excellent results have been produced in nuclear resonant scattering research, especially since the vacuum undulator beamline of AR-NE3 was constructed in 1990. The purpose of the meeting was to share information about the current status of the beamline and discuss how to extend the research. During the workshop, the status and the improved points of the experimental station, the beamline and the PF-AR storage ring were reported. New experimental results and plans for the near future were also discussed.

(2) "Recent Status and Future Prospects of SAXS Studies at the Photon Factory" held on October 23-24, 2003 at the PF.

In recent years, the environment for Small Angle X-ray Scattering (SAXS) experiments has been changed. At the PF, a new part-time SAXS/WAXS station BL-9C is constructed, and experimental proposals for polymer science and industrial applications are increasing. In the near future, BL-15A must be reconstructed accompanying the "straight-sections upgrading project" of the PF storage ring. At the workshop, the current status of the BL-9C, 10C and 15A SAXS stations and the scientific activities of the SAXS were reported. The current problems, how to improve them and future plans for the experimental apparatus and the operation of these beamlines were also discussed.

(3) "Namotechnology and High Resolution Electron Spectroscopy" held on December 19-20, 2003 at the PF.

Rapid development of nanotechnology has given big impact to material science. On the other hand, how the change and control of electronic state give the new functions observed in "nano" field is still unknown. To elucidate the mechanism, high resolution electron spectroscopy is one of the powerful techniques. At the PF, new high resolution electron spectroscopy beamline,

which uses a high luminous undulator synchrotron radiation, is planning. During the workshop, applications of the beamline for "nano" field material science, needs of the new beamline and the performance of the beamline were discussed.

(4) "Progress of Studies on the Structure and Electronic States of Materials in Photo-excited States" held on March 5, 2004 at the PF.

As the recently coined term “optical devices” demonstrates, the ability to efficiently alter and control with photons properties such as electric conductivity, reflectivity, absorption coefficient, structure and magnet moment has become an application of practical importance. In order to understand the basic processes underlying the effects, it is necessary to understand the structure and electronic state of the material in its photo-excited states. This requires a time-resolved detection technique synchronised to the exciting laser pulse, and until now this has been predominantly acheived with pump-probe type experiments. However, many new developments have recently been made with pioneering experiments which make use of the pulsed nature of synchrotron radiation in laser-synchrotron pump-probe techniques. Taking advantage of the single-bunch operation of the PF-AR, construction is underway of facilities for laser-synchrotron pump-probe time-resolved X-ray scattering and X-ray absorption experiments. In this workshop recent devolopments in studies of the structure and electronic states of materials in photo-excited states and directions for future synchrotron radiation experiments in this field were discussed.

(5) “Future Prospects of Science and Technology in the Soft X-Ray Region with Crystal Monochromators at the Photon Factory” held on March 23, 2004 at the PF.

In many synchrotron-radiation facilities, experimental studies using soft X-rays have been greatly expanded because there are no appropriate soft X-ray sources other than the synchrotron radiation. At the 2.5-GeV storage ring of the PF, the critical energy for the bending-magnet radiation is about 4 keV and two unique beamlines have been developed on insertion devices of U#02 and EMPW#28 for linear and elliptically polarized lights. Thus, a lot of interesting experiments have been performed at soft X-ray beamlines of the PF. Moreover, the "straight-sections upgrading project" is in progress which includes the installation of short-period narrow-gap undulators in the newly created short straight sections. The new insertion device will provide 1-3 keV X-rays as the first harmonic radiation and is the best source for microbeam application. At the workshop some typical achievements in the soft X-ray studies were overviewed and new opportunities with the modified PF ring were extensively discussed.

3-3 PF Seminars

There were 22 PF seminars held in FY2003 which were given by the PF staff and visitors. The list is summarized in Table 1.

Table 1 A list of PF seminars held in FY2003.

X-ray detector development at the Swiss Light Source EIKENBERRY Eric F. (SLS, Switzerland) Apr. 15, 2003
Development of microbeam cell irradiation system for research on low dose radiation effect KOBAYASHI Katsumi (KEK-PF) Apr. 22, 2003
Attosecond phase manipuilation of the quantum wave-packet with double-pulsed photons SATO Yukinori (Tohoku Univ.) Apr. 25, 2003
Dynamics of Fe-complexes by means of ^{57}Fe nuclear resonant quasi-elastic scattering HARUKI Rie (KEK-PF, JSPS) May 8, 2003
X-ray absorption spectroscopy: from biology to archeology JALIEHVAND Farideh (Univ. of Calgary, Canada) May 29, 2003
Analysis on the RalA-Sce5 interaction from the crystal structure FUKAI Shuya (Tokyo Inst. of Tech.) Aug. 20, 2003
X-ray non-reciprocal directional dichroism and X-ray non-reciprocal diffraction ARIMA Takahisa (Univ. of Tsukuba) Sep. 18, 2003
Biosynthesis and function of glyocosaminoglucan carbohydrate SUGAWARA Kazuyuki (Kobe Pharm. Univ.) Oct. 24, 2003

New horizon of "non-equilibrium dynamics"
KOSHIHARA Shinya (Tokyo Inst. of Tech.) Oct. 24, 2003

Molecular machinery for trafficking of ceramide
HANADA Kentaro (National Inst. of Infectious Diseases) Nov. 5, 2003

X-ray absorption, X-ray magnetic circular dichroism and molecular magnetism
MICHAEL Verdaguer (Univ. Pierre et Marie Curie, France) Nov. 5, 2003

XAS at the ESRF: activites on BM29 and ID24
PASCARELLI Sakura (ESRF, France) Nov. 7, 2003

Coherence in the photo-induced phase transition of MMX and charge-transfer complexes
YONEMITSU Kenji (IMS) Nov. 11, 2003

An insight into ADP/ATP translocation: the structure of mitochondrial ADP/ATP carrier at 2.2Å resolution
PEBAY-PEYROULA Eva (Inst. de Biol. Structurale Grenoble, France) Nov. 13, 2003

Time-resolved diffraction with electron or X-ray beam
IHEE Hyotcherl (Korea Advanced Inst. of Sci. and Tech., Korea) Nov. 18, 2003

Dielectric response, oscillator strength, scattering factor, and so on: a suggestion of how to understand the condensed matters
INOKUCHI Michio (ANL, USA) Nov. 19, 2003

Present status and future prospects of Shanghai Synchrotron Radiation Source
XU Hongje (Inst. of Shanghai of Applied Physics, China) Dec. 22, 2003

Protein structure-function analyses; the road from prediction to confirmation
SAYERS Zehra (Sabanci Univ., Turkey) Jan. 16, 2004

The Cornell ERL project
HOFFSTAETTER George (Cornell Univ., USA) Feb. 18, 2004

Exhibition of mineral crystal samples -- The root of material structure science --
TANAKA Masahiko (KEK-PF) Feb. 27, 2004

Photoemission electron microscopy: PEEM and other tools to image catalytic surface reactions
ROTERMUND Harm Hinrich (Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany) Mar. 4, 2004

SESAME, synchrotron radiation for experimental science and application for the middle east
AL-KOFAFI Mahmoud (Al-Balqa Applied Univ., Jordan) Mar. 18, 2004