to enable us to commence the structural analysis by the molecular replacement method. In addition, we have collected data from BEV and HRV2 crystals with anti-viral drugs bound (WIN compounds), an HRV2 monoclonal antibody escape mutant, and a possible HRV2-Fv antibody fragment complex. We will report the stage of data processing and discuss problems imposed by large cell dimensions.

PS-01.02.07 A NEW MACROMOLECULAR CRYSTALLOGRAPHY STATION ON THE BEAMLINE BL-18 AT THE PHOTON FACTORY. By N. Watanabe*[1)], S. Adachi[2)], A. Nakagawa[1)], and N. Sakabe[1)], [1)] Photon Factory, National Laboratory for High Energy Physics, Tsukuba, Ibaraki 305, [2)] The Institute of Physical and Chemical Research (RIKEN) , Wako, Saitama 351-01, JAPAN.

A new experimental station (BL-18B) has been constructed on the bending-magnet beamline at the Photon Factory (PF) to extend its capability for macromolecular crystallography. The branch beamline is equipped with a 1m long fused quartz bent cylindrical mirror with 1:1 focusing, located 13.75m from the source. The surface of the focusing mirror is cylindrically polished and platinum coated with a sagittal radius of 41.3mm, and bent to a radius of ca. 4,500m. The glancing angle of the X-ray beam with the mirror is set to about 3mrad, which gives a cut-off wavelength of approximately 0.4Å. The mirror can focus the X-ray beam to about 0.4mm (vertical) × 1.2mm (horizontal), which is consistent with the expected focus size simulated by the raytracing technique. The monochromator is a fixed-exit double-crystal, located 23.1m from the source. The monochromator consists of two kinds of flat crystals, usually silicon (111) and germanium (111), mounted parallel on the goniometer. The two types of crystal are therefore interchangeable without opening the vacuum chamber. The monochromator θ_B range is 5° to 70°. Photon flux of the monochromatic beam is 9.6×10^9 Photons/sec (Si) and 2.3×10^{10} Photons/sec (Ge) at 1.38Å at the sample position when the PF ring is operated at 2.5GeV, 300mA and the acceptance of the first siit is 0.2mrad (vertical) and 2.0mrad (horizontal).
BL-18B has been built as an end station in order to have enough space available for installing a large camera and other instruments in the experimental hutch. The station will extend the capability at PF beyond what is provided for with the Weissenberg camera (Sakabe, N., *NIM*,1991, **A303**, 448) at the BL-6A2 station (Satow, Y. et al., *Rev.Sci.Instrum.* 1989, **60**, 2394). In addition to increasing the experimental time available for users BL-18B, unlike BL6A2, provides a point focused white beam. This latter feature gives the station time-resolved Laue capability. Special Image Plates (IP) (400mm×400mm and 400mm×800mm) and IP scanner are also being developed to allow more effective exposures using Weissenberg and Laue cameras at the station.

PS-01.02.08
POSITION SENSITIVE PHOTOMULTIPLIER TUBE NEUTRON DETECTOR. Clive Wilkinson, Mogens Lehmann*, Andre Gabriel, John Allibon and Francois Dauvergne, European Molecular Biology Laboratory, BP156X, 38042 Grenoble CEDEX, France.
We are presently constructing a neutron Laue diffractometer to extend the range of protein structures which can be measured to atomic resolution by neutron diffraction. Finding a two-dimensional detector with digital readout, spatial resolution of 1mm, good dynamic range and a large angular coverage has become a significant part of the project.
One possible solution is to have an array of position sensitive photomultiplier tubes, each with a Li glass scintillator, around the sample. We have tested a Hamamatsu 3" square tube with a Nuclear Enterprises 902 scintillator greased onto its front surface. Light produced by the scintillator falls on the photocathode and the resulting electron shower is amplified by a chain of dynodes and subsequently detected on an anode grid at the back of the tube. The data reading system consists of delay lines which are connected to each set of anode wires, along which the electron pulses travel simultaneously. By timing the arrival of the pulses at each ends of the delay lines, the X,Y coordinates of the original neutron arrival at the scintillator can be found.
The integrated intensities of reflections have been measured on a four-circle neutron diffractometer with the tube and with a 'normal' BF_3 monodetector. Using a 2mm thick scintillator, the tube has been found to be more than 60% efficient at a neutron wavelength of 0.84A, and to have a resolution better than 1mm.
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PS-01.02.09 A NEUTRON-SENSITIVE TV-IMAGE INTENSIFIER SYSTEM. By H. G. Smith* and J. B. Davidson, Oak Ridge National Laboratory, Oak Ridge, TN 37830.
A neutron-sensitive TV-image-intensifier system has been in use at the ORNL HFIR reactor for a number of years. This system, though only qualitative and somewhat bulky, has been extremely useful in monochromator alignment, sample alignment in environmental containers, and in the characterization of samples -- single crystal and polycrystalline -- all in real time. With the recent development of minature CCD cameras coupled with PCs and frame grabbers and imaging processing techniques, the new systems are almost off-the-shelf items and can be readily assembled in-house. While not quite at the quantitaive stage for accurate data accumlation, processing, and analysis, the new systems are compact, easy to use, and relatively inexpensive.

