01-Instrumentation and Experimental Techniques (X-rays, Neutrons, Electrons)

dimensional intensity data were unable to be collected with an usual four-circle diffractometer. This indicates that if the data collection may be performed more quickly, a wide variety of reactions would be made clear on the basis of the structural analysis. We have designed and constructed a new type of diffractometer, which is composed of a x-type goniometer, a no-screen type Weissenberg camera with two imaging plates as detectors and a reader for the imaging plate with a laser. The crystal is mounted on a x-type goniometer and is aligned automatically by two still photographs. Then the three-dimensional intensity data were collected within an hour with the Weissenberg camera using two imaging plates alternately for recording and reading the data. All the operations are computer-controlled. Some examples showing the dynamical structural changes have been obtained using the new diffractometer.

MS-01.01.06 SUB-NANOSECOND TIME RESOLUTION IN LAUE DIFFRACTION USING A THIRD GENERATION SYNCHROTRON
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The high brilliance of third generation synchrotrons will make it possible to shorten the exposure time by a factor of 10-100 compared to existing SR sources. Of particular interest for time resolved crystallography is the Laue method which makes optimal use of the polychromatic synchrotron spectrum and permits the recording of near complete data sets in a single shot for high symmetry crystals.

We present here the design of the white beam station BL3 at the ESRF which will use a soft wiggler with 48 poles and a maximum field of 0.76 T at 20 mm gap giving a critical energy of 18 keV. The deflection parameter K can be varied between 2 and 5. The polychromatic radiation is focused by a toroidal mirror and ray-tracing calculations show that the 16 mA single bunch mode will produce 4x10^10 photons onto a small 0.2x0.2 mm^2 sample from one electron bunch. The duration of the single bunch is 50 ps and simulations of the diffraction pattern from myoglobin predict 300-750 usable reflections.

Single bunch exposures may therefore open up the possibility of capturing short lived excited states in a reaction scheme but it has also the advantage that the diffraction pattern may be free of radiation damage since the time scale associated with the migration of free radicals is supposed to happen on a much longer time scale. The beamline will be installed in September 1993 and first beam is expected in the 4th quarter of 1993.

PS-01.01.07 DECONVOLVING LAUE MULTIPLE DIFFRACTION SPOTS BY THE DENSITY MODIFICATION METHOD
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In a Laue diffraction pattern 10-20% of the spots result from the exact superposition of two or more reflections which are 'harmon-