

SPring-8 Experiment Report

Proposal No. 1998A0061-NL-np

BL/Station: BL44B2

Extracting Phase Information from Laue Diffraction Data

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Laue diffraction data can be treated as multi-wavelength anomalous dispersion (MAD) data and redundancy in the raw intensity measurements can be used to extract phase information. During this 48-hour beamtime at SPring-8, we collected six completed Laue set from crystals of native and Hg/Pt derivatives of protein hen egg white lysozyme. The total number of images is about 180. The spindle angle interval was 5° to ensure high redundancy and the reverse beam geometry (i.e. 180° rotation) was used throughout so that the Friedel pairs were recorded at a similar condition. The preliminary data processing using the on-line LAUEGEN program showed that these data sets are of high quality with a typical data resolution of 1.75\AA for the native and 1.9\AA for derivatives. The positional refinement gave a typical r.m.s. 0.025mm which is excellent considering the raster size of 0.1mm . The Laue MAD experiment requires high precision data quality and it seems to me this was exactly what we obtained at the SPRing8. I am very hopeful that these data sets will enable me to carry out the Laue MAD phasing and structure determination for first time in the history of crystallography.