ESRF	**Experiment title:** **GlpE, a sulfurtansferase at ultra-high resolution**	**Experiment number**: **LS-1664**
Beamline: ID14	**Date of experiment**: from: 19-07-2000 to: 21-07-2000	**Date of report**: 01-08-00
Shifts to BAG: 6	**Local contact(s)**: W-Burmeister	*Received at ESRF:*

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Report

GlpE is a sulfurtransferase from E.coli, whose biological function is not yet completely established. We are interested in the conservation of the fold within rhodanese-like proteins, in prokaryota, as a means of establishing a definite biological function for the whole family. Analogies/structural homologies with some phosphatases have ben recently established. Following a high resolution (1.06 Å) dataset collected at DESY on GlpE, an attempt to collect at resolution below the 1.0Å threshold was carried out, with the aim of trying direct methods (shelxd andSnB) for the structure solution of GlpE. A crystal displaying diffraction pattern up to 0.9 Å resolution was used. Unfortunately, the crystal displayed substantial decay and the datacollection was interrupted after about 50 degrees.

Several heavy atom soakings were collected, to a resolution limits of 1.6 Å. They were Lead, Tungsten, Lutetium, Holmium, and Uranyl soakings. The data sets are currently under processing.

Unfortunately, it appears that GlpE native crystals are characterized by native non-isomorphism. Given that, and considering the very high difraction power of GlpE crystals, a new data collection at resolution below 1.0 Å would make it feasible the structure solution with direct methods. If successfull this would represent the first case (apart from the case-study of lysozyme) of protein not containing heme groups solved with direct methods.

Bordo, D., Deriu, D., Colnaghi,R., Pagani,S., Carpen, A., Bolognesi,M.
THE CRYSTAL STRUCTURE OF A SULFURTRANSFERASE FROM *AZOTOBACTER VINELANDII* HIGHLIGHTS THE EVOLUTIONARY RELATIONSHIP BETWEEN THE RHODANESE AND PHOSPHATASE ENZYME FAMILIES. *J.Mol.Biol*. (2000), 298 , 691-704.