ESRF EUROPEAN SYNCHROTRON RADIATION FACILITY

INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

Experiment Report Form

The double page inside this form is to be filled in by all users or groups of users who have had access to beam time for measurements at the ESRF.

Once completed, the report should be submitted electronically to the User Office using the **Electronic Report Submission Application:**

http://193.49.43.2:8080/smis/servlet/UserUtils?start

Reports supporting requests for additional beam time

Reports can now be submitted independently of new proposals – it is necessary simply to indicate the number of the report(s) supporting a new proposal on the proposal form.

The Review Committees reserve the right to reject new proposals from groups who have not reported on the use of beam time allocated previously.

Reports on experiments relating to long term projects

Proposers awarded beam time for a long term project are required to submit an interim report at the end of each year, irrespective of the number of shifts of beam time they have used.

Published papers

All users must give proper credit to ESRF staff members and proper mention to ESRF facilities which were essential for the results described in any ensuing publication. Further, they are obliged to send to the Joint ESRF/ ILL library the complete reference and the abstract of all papers appearing in print, and resulting from the use of the ESRF.

Should you wish to make more general comments on the experiment, please note them on the User Evaluation Form, and send both the Report and the Evaluation Form to the User Office.

Deadlines for submission of Experimental Reports

- 1st March for experiments carried out up until June of the previous year;
- 1st September for experiments carried out up until January of the same year.

Instructions for preparing your Report

- φιλλ ιν α σεπαρατε φορμ φορ εαχη προφεχτ ορ σεριεσ οφ μεασυρεμεντσ.
- τψπε ψουρ ρεπορτ, ιν Ενγλιση.
- ινχλυδε τηε ρεφερενχε νυμβερ οφ τηε προποσαλ το ωηιχη τηε ρεπορτ ρεφερσ.
- μακε συρε τηατ τηε τεξτ, ταβλεσ ανδ φιγυρεσ φιτ ιντο τηε σπαχε αϖαιλαβλε.
- ιφ ψουρ ωορκ ισ πυβλισηεδ ορ ισ ιν πρεσσ, ψου μαψ πρεφερ το παστε ιν τηε αβστραχτ, ανδ αδδ φυλλ ρεφερενχε δεταιλσ. Ιφ τηε αβστραχτ ισ ιν α λανγυαγε οτηερ τηαν Ενγλιση, πλεασε ινχλυδε αν Ενγλιση τρανσλατιον.

	Experiment title: Cytochrome b6f	Experiment number: 30-01-561
Beamline: BM30A	**Date of experiment**: from: 21.5.2002 to: 22.5.2002	**Date of report**: 18.12.2002
Shifts: 3	**Local contact(s)**: Jean-Luc Ferrer	***Received at ESRF:***

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Report:

The long term aim of this experiment is to determine the crystallographic structure of the membrane protein cytochrome b_6f complex (cyt b_6f) which catalyzes the transfer of electrons between the photosystem II and photosystem I in oxygenic photosynthesis, and couples this transfer with the translocation of proton through the thylacoÔd membrane. It is a membrane protein that contains 2x8 polypeptide chains with a molecular weight of ca 200000 Da. It is one of the last large complex protein of photosynthesis whose structure is still not known, although the soluble portions of the Rieske protein (Carrell et al., 1999) and the cytochrome *f* (Martinez et al. 1997) have already been determined. Some functional and structural homologies exist with the cytochrome bc_1 of the respiratory chain of mitochondria, whose structure is known(for a review see Berry et al, 2000).

The goal of these first series of experiment was to test cristallisation conditions in order to find a stable and diffracting crystal. Several stabilisation and cryo soaking conditions have been tested starting from non diffracting crystals and ending up to crystal diffracting to 3.5 Å. The space group is either I222 or $I2_12_12_1$ with cell dimensions of 100.9 x 170.6 x 352.3 ≈. The crystal diffract weakly but a decent data set could be collected with Rsymm 0.06 (0.21 at 3.5 ≈) and 99.8 % completeness. The crystals have a size of about 0.2 x 0.1 x 0.4 mm, and are quite difficult to handle as it is often the case for membrane protein (Matthews coefficient Vm 3.8 ≈^{3}/Da without taking into account the detergent), smaller crystals yield often better diffraction pattern.

This results are very encouraging to pursue these experiments (improvement of resolution, search of heavy atoms and functional derivatives).