



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 via the User Portal:

<https://www.esrf.fr/misapps/SMISWebClient/protected/welcome.do>

Reports supporting requests for additional beam time

Reports can 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

- fill in a separate form for each project or series of measurements.
- type your report, in English.
- include the reference number of the proposal to which the report refers.
- make sure that the text, tables and figures fit into the space available.
- if your work is published or is in press, you may prefer to paste in the abstract, and add full reference details. If the abstract is in a language other than English, please include an English translation.



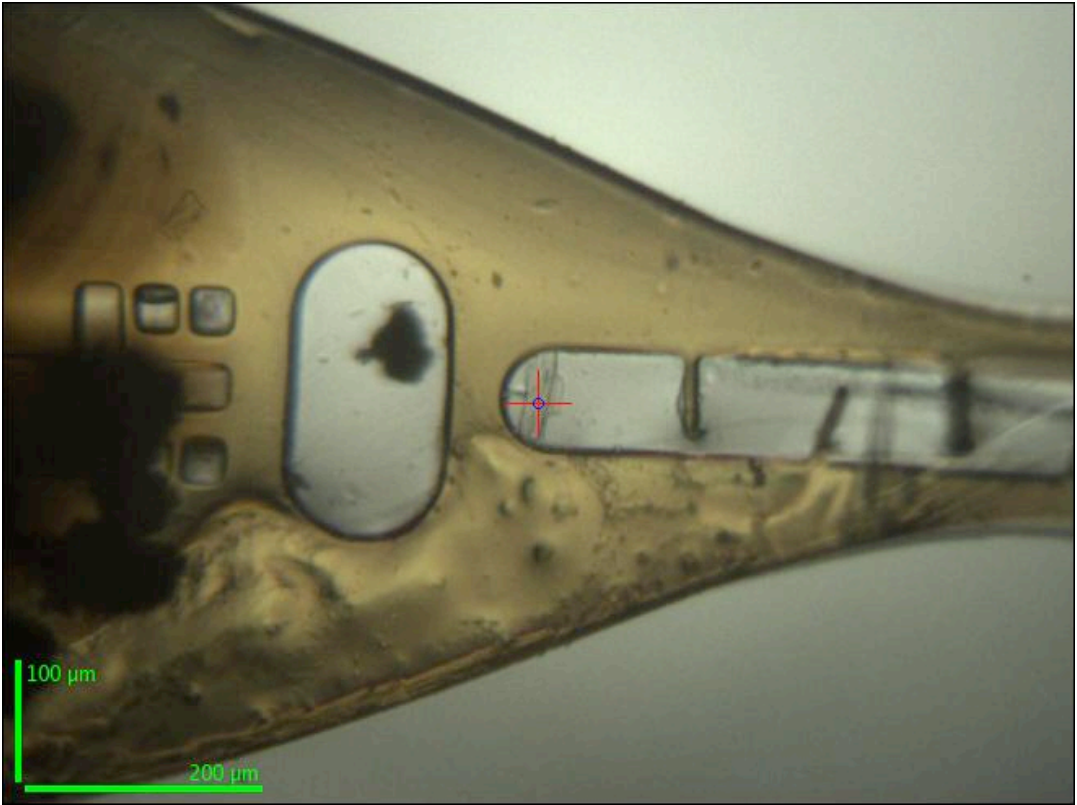
	Experiment title: Crystal structure of a eukaryotic DNA polymerase	Experiment number: MX1383
Beamline: ID23-2	Date of experiment: from: 18 Nov 2011 to: 19 Nov 2011	Date of report: 30 Nov 2011
Shifts: 2	Local contact(s): Elspeth Gordon	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Matthew Hogg, Umeå University Erik Johansson, Umeå University Elisabeth Sauer-Eriksson, Umeå University		

Report:

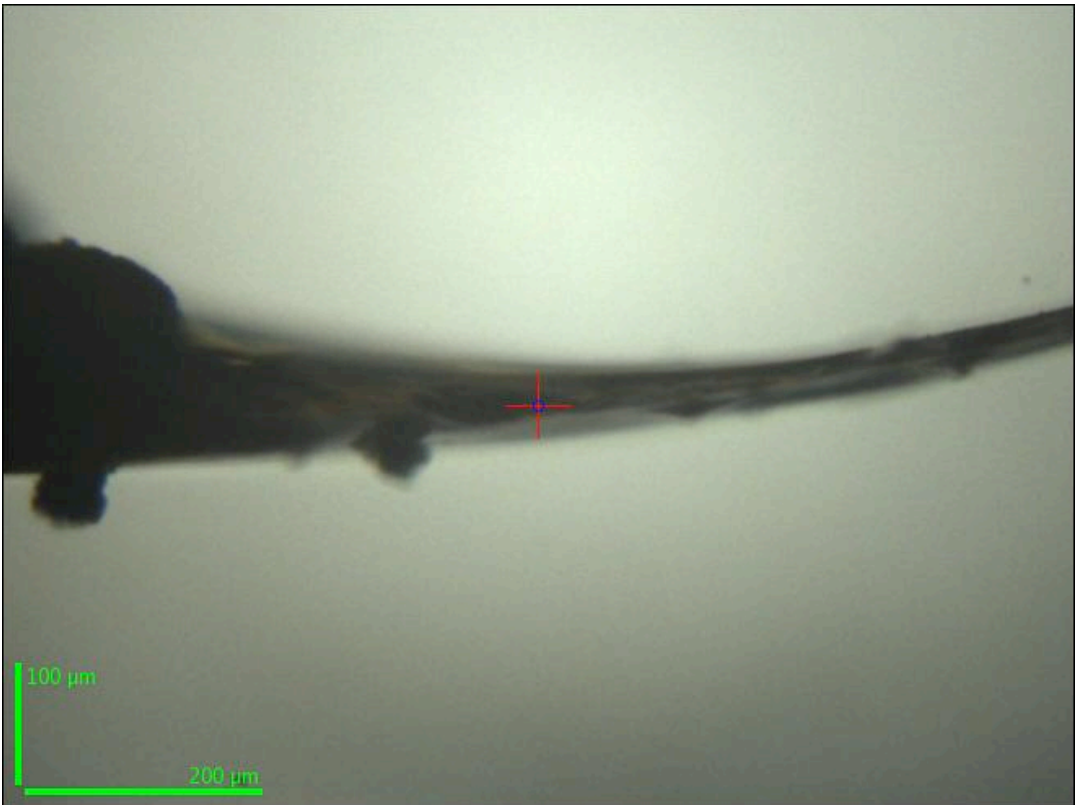
The experiments performed under experiment number MX1383 were a continuation of the work performed under experiment number MX1342. Using the information gained from the first beamtime allocation, we were able to more efficiently and effectively mount the small and extremely thin crystals that we are able to grow. While our first beamtime yielded diffraction for only 4/50 crystals, our second beamtime yielded diffraction data for 40 of the 60 crystals we were able to screen but the best diffraction we see is still limited to no greater than 4Å. We were also able to collect several hundred frames of data on 20 of these crystals and were able to observe loss of resolution as a function of xray exposure.

The data collected during this experiment has led us to the conclusion that one of our cell axes is quite long, somewhere between 300 and 400Å. We also suspect that the mosaicity along one of the axes is quite high. We believe that the only way to collect a complete data set is to collect data along the thin edges of the crystals, which is made difficult due to the fact that the plates are no more than 2 or 3 um thick and are difficult to see in the context of the mounting loop. The crystals are also very flexible, which makes data collection along the thin edge quite challenging.

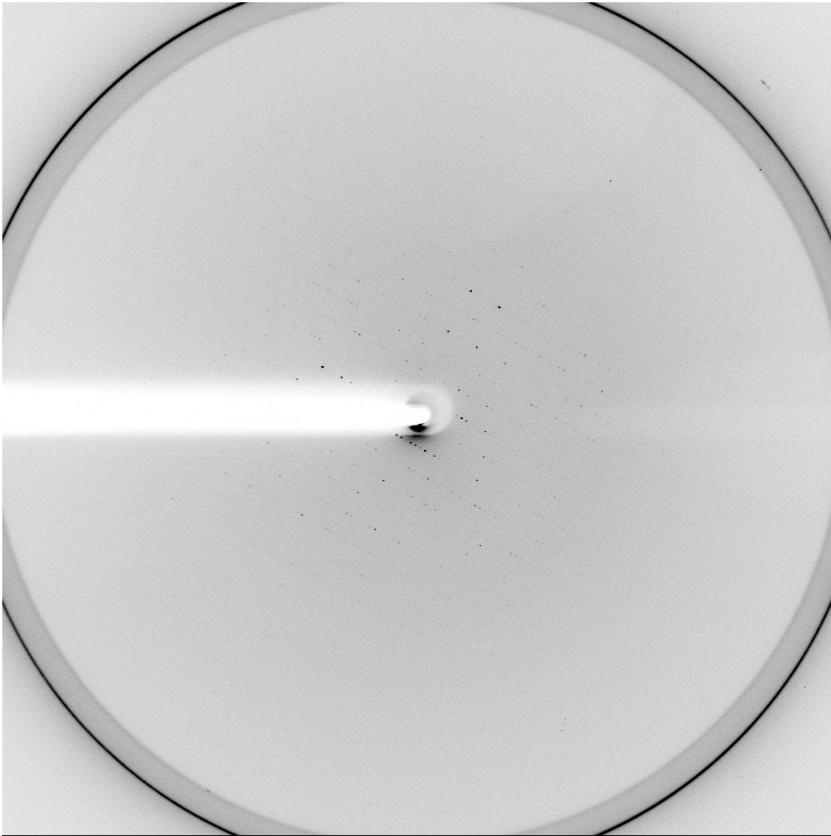
In summary, the beamtime allocated to this project has enabled us to test the diffraction of more than 100 crystals of very large complexes of eukaryotic DNA polymerase epsilon in complex with its DNA substrates. Unfortunately, we have not been able to collect useful data due inherent pathologies in the crystal lattice. We are now directing all efforts to obtaining new crystal morphologies that will be more amenable to collection of usable diffraction data.



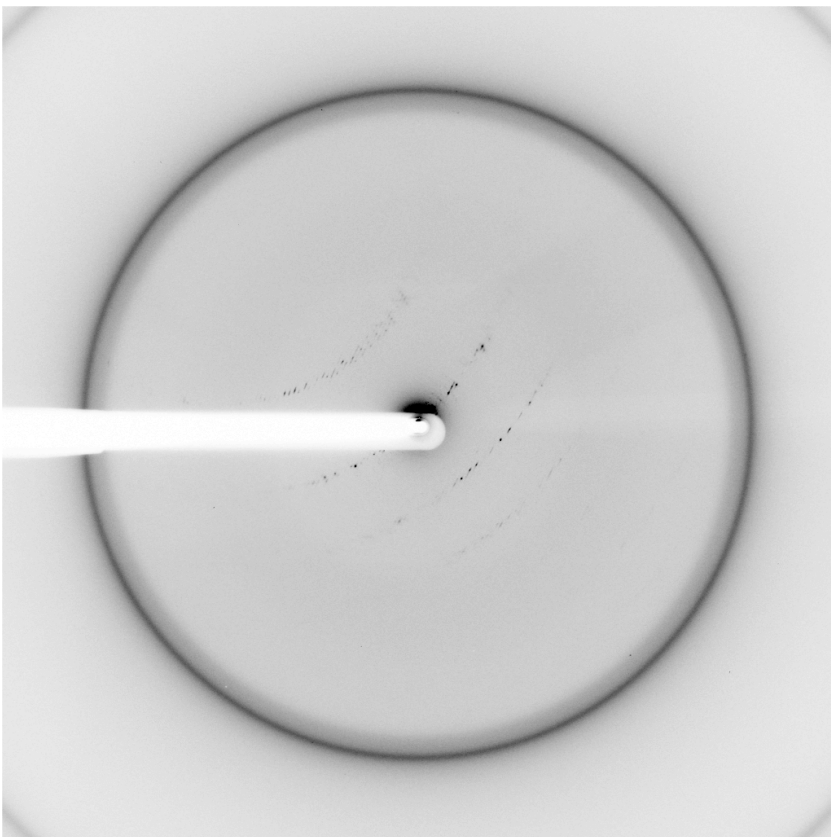
We can hit the broad face of the crystals with the beam.



But focusing along the thin edge of the plates, where most of the data is hiding, is very difficult due to the inability to see the crystals in this orientation.



Diffraction pattern with the beam aimed into the broad face of the crystal.



Diffraction pattern with the beam aimed aimed at the thin edge of the crystal.