EUROPEAN SYNCHROTRON RADIATION FACILITY

INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

ESRF

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

- 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.

ESRF	**Experiment title:**	**Experiment number**: MX-1437
Beamline:	**Date of experiment**: from: 01/07/2012 to: 01/07/2012	**Date of report**: 20/09/2012
Shifts:	**Local contact(s)**: Louiza Zerrad	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

Coquille Sandrine, University of Geneva.

Thore Stéphane, University of Geneva.

Report:

Proposal title: SAXS analysis of a Pentatricopeptide repeat (PPR) protein in complex with its RNA target.

Proposal number 1437.
Assigned number of Shift: 1.

We came to the synchrotron with several samples containing our PPR protein of interest, alone and in complex with its RNA target site as well as several additional samples from projects related to protein - RNA interaction.

With the first protein, PPR10, we could obtain a partial result. Indeed, it appears that the protein was in rapid equilibrium between multiple oligomeric states (monomer-dimer at least). This equilibrium prevented clear molecular weight and subsequent envelop calculation. Despite the use of several samples at various concentrations, we could only measure reasonable data from 1 concentration. With these data, an envelope was calculated and we are now trying to fit an atomic model into.

With the second set of samples, several concentrations of one RNA modifying enzyme were measured but this protein seems to aggregate and we could not obtain reasonable data. We

also measured data from a sample with the same protein together with its RNA substrate, however, it appeared that the measure signal corresponded to the RNA alone, again indicating heavy aggregation/precipitation of this particular protein. A third sample was brought along and corresponded to a protein with multiple RNA recognition motifs (RRM). This protein behaved as expected and a nice molecular weight could be obtained as well as an interesting V-shape envelop in which several atomic models of RRM could potentially be fitted. We are now working actively to obtain the protein in complex with its target RNA, and potentially, plan to come back with these samples to further observe how the RNA is associating with these RRMs.

Finally a sample from another group from our department was also carried with us. This sample was measured successfully and this group has now established a scientific collaboration with the group of Adam Round at ESRF to further analyze these experiments.

In conclusion, our trip to the SAXS beam line BM29 allowed us to collect data from multiple samples, some with success and some others less successful. The setup was very user friendly and we will certainly apply again to obtain access to BM29. We first have to improve the quality of our samples which will help us make the most out of our measuring time.