



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: Cubic lipid networks for drug storage and controlled release	Experiment number: SC3266
Beamline:	Date of experiment: from: 1 Oct 2011 to: 4 Oct 2011	Date of report: 28/2/2012
Shifts: 9	Local contact(s): Michael Sztucki	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Richard Templar Nick Brooks * Oscar Ces * Robert Law John Seddon Roland Winter		

Report:

High pressure SAXS experiments were carried out at temperatures of 25 – 45 °C and pressures of 0 – 3500 bar on the following samples:

Monoolein in excess water

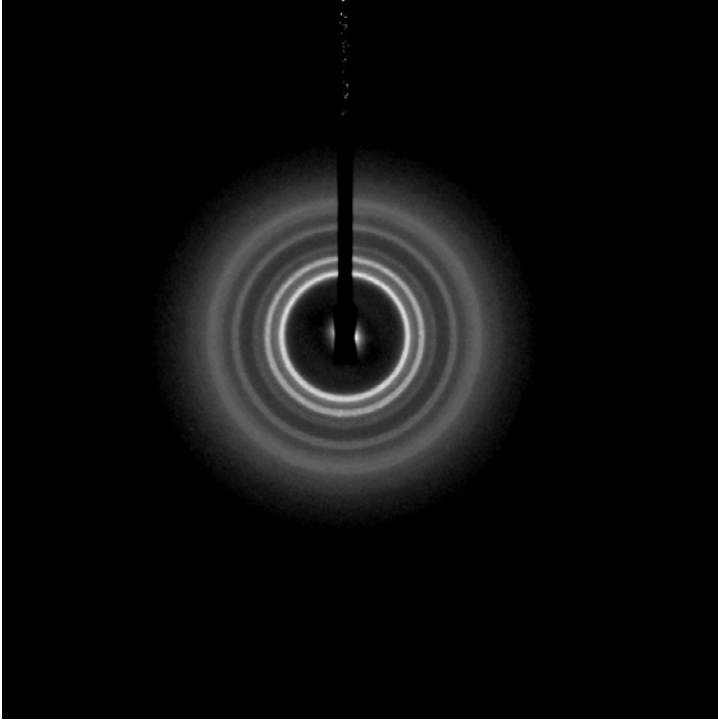
Monoolein with dichlofenac sodium salt in excess water

Monoolein with lidocane in excess water

Samples were run with drug loadings between 5 and 30 wt% (relative to lipid).

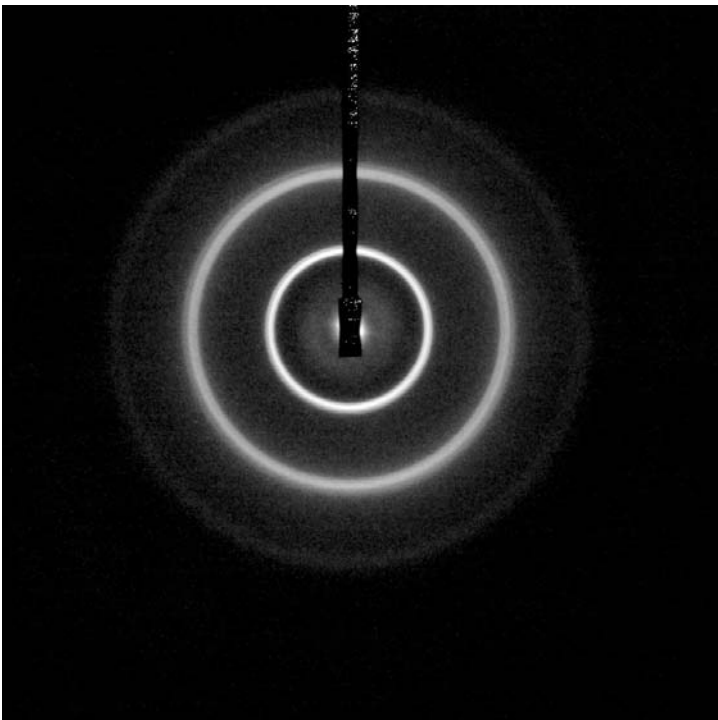
We collected a large amount of data and analysis is still ongoing, however some preliminary results are shown below.

The diffraction pattern obtained from hydrated monoolein at atmospheric pressure and 27 °C is shown below:



This pattern is typical of the Q_{II}^D bicontinuous cubic phase as expected under these conditions.

Introducing 10 wt% diclofenac sodium salt causes a phase change to a lamellar structure:



The fact that introduction of diclofenac causes a decrease in the magnitude of the interfacial curvature is expected as it preferentially increases the relative head group volume.

We are currently in the process of analysing our pressure, temperature and composition dependent data to generate a complete picture of the phase behaviour of these drug – lipid systems.