



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>

Deadlines for submission of Experimental Reports

Experimental reports must be submitted within the period of 3 months after the end of the experiment.

Experiment Report supporting a new proposal (“relevant report”)

If you are submitting a proposal for a new project, or to continue a project for which you have previously been allocated beam time, you must submit a report on each of your previous measurement(s):

- even on those carried out close to the proposal submission deadline (it can be a “*preliminary report*”),
- even for experiments whose scientific area is different from the scientific area of the new proposal,
- carried out on CRG beamlines.

You must then register the report(s) as “relevant report(s)” in the new application form for beam time.

Deadlines for submitting a report supporting a new proposal

- 1st March Proposal Round - **5th March**
- 10th September Proposal Round - **13th September**

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.

Instructions for preparing your Report

- fill in a separate form for each project or series of measurements.
- type your report in English.
- include the experiment number 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: Absolute pressure scale at megabar pressures from thermal diffuse scattering

Experiment number:
HC 3676

Beamline: ID27	Date of experiment: from:20/04/2018 to: 24/04/2018	Date of report: 09/03/2021
Shifts:18	Local contact(s): Gaston Garbarino	<i>Received at ESRF:</i>

Names and affiliations of applicants (* indicates experimentalists):

Adrien Girard*

Michal Stekiel*

Bjoern Wehinger*

BOSAK Alexei

MIRONE Alessandro

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Report:

We proposed to establish a new absolute pressure scale in the megabar region based on the measurement of the thermal diffuse scattering (TDS) from high quality MgO single crystal. We have performed the experiments on single MgO crystals but we ran into considerable problems which are detailed below.

The TDS from single single crystals is extremely sensitive to the elastic strain experienced by the sample in the high pressure cell. We have found after 4 days of trial that the quality of the sample diffuse scattering is severely altered above a few GPa. While the peaks intensities might be sufficient to performe structure analysis from bragg peaks, we have concluded that TDS under high pressure is practically very difficult to perform. The TDS was systematically parasited by elastic scattering from high pressure induced defects on the crystals, and the crystal quality was not good enough for TDS analysis above a few GPa.

After a four days of unsuccessfull trials, it was decided to stop the experiment.