



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: Size effect on local structure of Barium titanate doped with Ce at different temperature and composition	Experiment number: Ma2315
Beamline: ID22	Date of experiment: from: 22/01/2015 to: 27/01/2015	Date of report: 25/02/2015
Shifts: 12	Local contact(s): Carlotta Giacobbe	<i>Received at ESRF:</i>

Names and affiliations of applicants (* indicates experimentalists):

Monica Dapiaggi *

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Report:

The experiment was indeed a very successful one, despite some stability problems of the beam that occurred during the second day of the experiment. The local contact and the beamline scientist (A.N. Fitch) were both very helpful and allowed to obtain the excellent results of this experiment.

The 4 samples were collected at different temperatures, between about 100 K and 500 K with a liquid nitrogen cryostream. The aim was to check on their phase transitions in the measured temperature range, and to correlate that with their electric behaviour. The temperature at which structural phase transition occurs can, in fact, be tailored by means of the level of doping. The data were collected with the additional aim of studying the local structure of these barium titanates: the peculiar electric properties of these materials are likely to be due to an off-center displacement of the titanium ions within the octahedra (or the distorted 6 membered polyhedra in lower symmetry). Here is the comparison of data collected at two different temperatures: The phase transition is clearly visible, despite the very small structural distortion that takes place, due to the very high resolution of the beamline.

