

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: Nanoscale-heterogeneous two-phase states in epitaxial PbZrO ₃ /SrRuO ₃ /SrTiO ₃ heterostructures in field-induced structural switching.	Experiment number: HC-4532
Beamline:	Date of experiment: from: 10 Feb 2022 to: 14 Feb 2022	Date of report: 12 Sep 2022
Shifts:	Local contact(s): Edoardo Zatterin email: edoardo.zatterin@esrf.fr	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Laboratory St Petersburg State Polytechnical University Faculty Radiophysical Science & Engineering 29 Politechnicheskaya RU - 195251 ST PETERSBURG Dr BURKOVSKIY Roman Phone +7 905 228 69 76 email: roman.burkovsky@gmail.com FLORES GONZALES Jamil Phone +7 999 229 80 65 email: jamiledu_14@hotmail.com GANZHA Aleksandr email: alexander.ganzha@gmail.com KNIAZEVA Mariia email: kniazeva.maria225@yandex.ru		

Report:

On the first active day, an attempt was made to working at 21 keV. However, at this energy, we could not reliably locate the position of the electrodes by means of scattering. Nevertheless, the RSMs were collected. The next day, the energy was dropped to 10 keV, which made it possible to find electrodes, collecting the RSMs. On the night of the same day, we ran into the problem of applying an electric field to the film. After a while, we understood that the needle has deteriorated in conductivity, likely due to the X-ray-aided oxidation. In the end, the needle started to deposit huge amount of dirt onto the electrodes. This dirt is likely non-conductive. Likely, other needle material is needed (likely – wolfram or gold) and perhaps care needs to be paid to avoid the exposure of the needle by the direct beam. The last night we did useful nanoscopy trial: 30-nm beam scanning the 50-nm film. We do not see a huge variation in the superstructure intensity over p_x , p_y , which we interpret as domains being considerably smaller than the beam size, so many domains are always in the beam and the superstructure intensity does not go to zero upon scanning because a decent amount of the domains with the respective orientational state are always illuminated.