



EUROPEAN SYNCHROTRON RADIATION FACILITY

INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

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: X-ray tomography and acoustic emissions of in situ, time-resolved magma fracturing: insights into the causes of explosive volcanic eruptions	Experiment number: ES-1084
Beamline:	Date of experiment: from: December 1, 2021 to: December 6, 2021	Date of report: February 27, 2022
Shifts: 12	Local contact(s): Dr. B. Cordonnier	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Mattia Pistone, The University of Georgia (Athens, GA, USA)		

Report:

The beam session started with one issue that cost the loss of three entire shifts. An update of NABU/TOMWER made reconstruction not possible and no visual of the sample was possible at the time. Configuration of the setup could not be confirmed and launching the experiment was not making sense unless we could be sure that data could be exploited. After writing a workaround script to give us a temporary visual on the sample, experiments could be started.

At the beginning of the fourth shift, experiments using the KORE apparatus were performed and data were acquired efficiently through the seventh shift. In total, 9 experiments were successful. The three-dimensional analysis of the successful experiments is ongoing (Fig. 1).

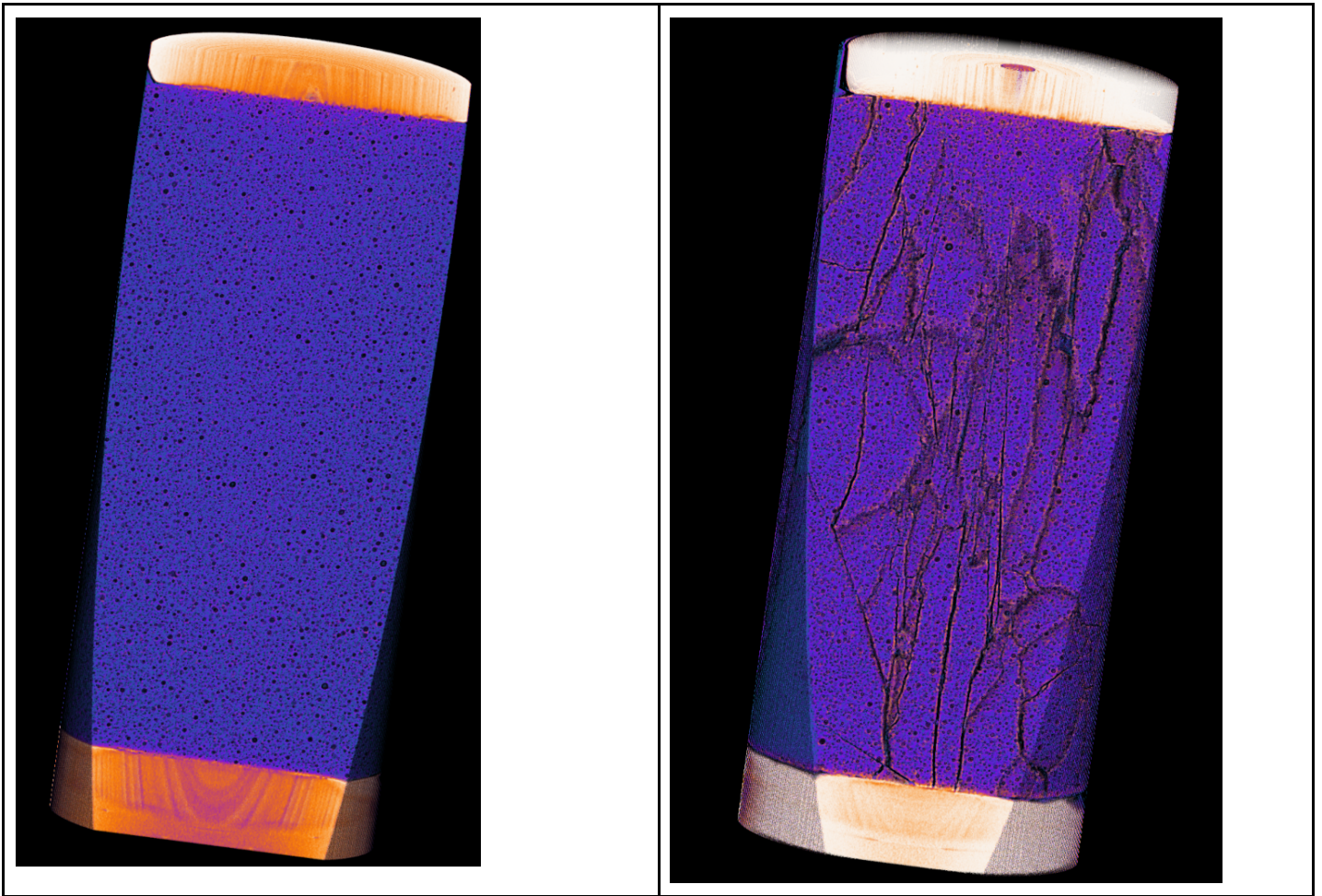


Fig. 1: Sagittal view of sample HGGB3_30_03 undergoing decompression and fracturing.

Once the original proposed project was completed, the remaining 5 shifts were dedicated to new experiments with the newly designed BOOMBEN setup, which consisted of a heating element furnace surrounded by teflon material and stainless lid. Such a setup was used to conduct rapid magma fragmentation experiments throughout the remaining five shifts of the beam session. The success of the experiments achieved with this setup allowed the preparation of the new proposal on magma flow in volcanic conduits for the March 2022 deadline.

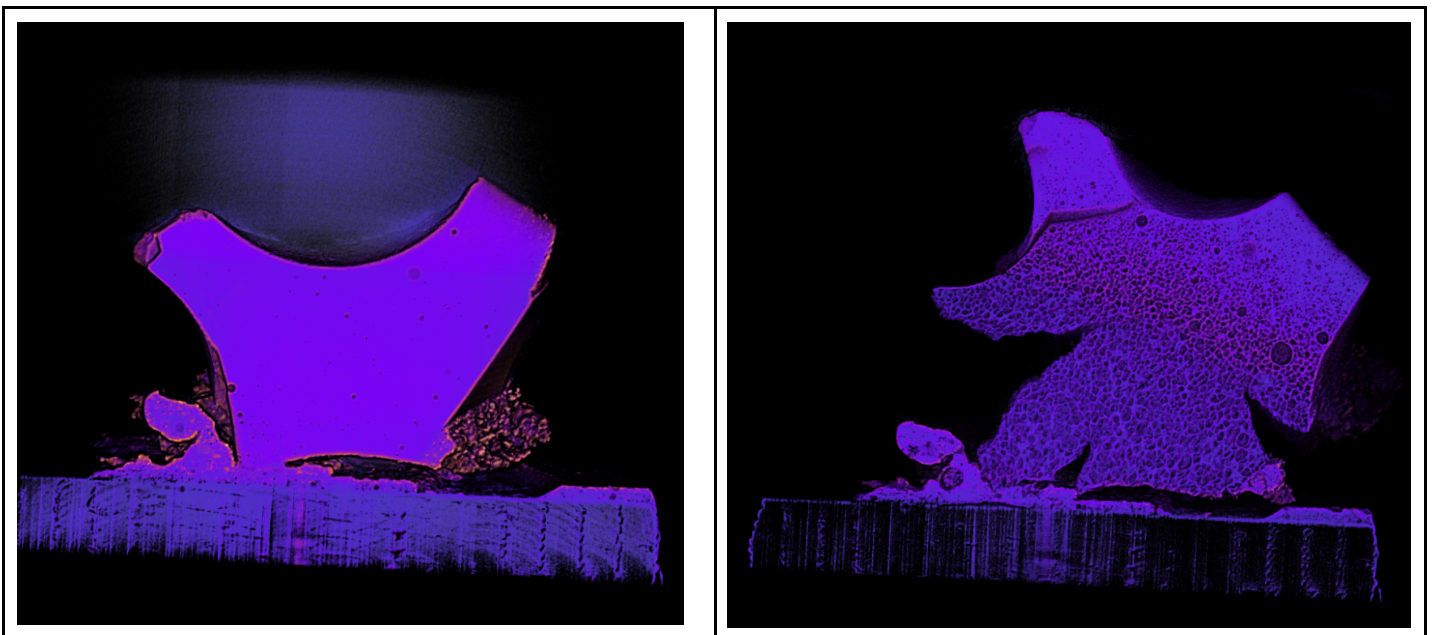


Fig. 2: Sagittal view of sample F0 undergoing heating in the novel BOOMBEN setup.

