

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: Determination of the structural signatures of flow-induced anisotropy in metallic glasses

Experiment number:
MA-2513

Beamline:

Date of experiment:

from: 23 July 2015

to: 24 July 2015

Date of report:

03/03/2020

Shifts:

Local contact(s):

Andrea Bernasconi

Received at ESRF:

Names and affiliations of applicants (* indicates experimentalists):

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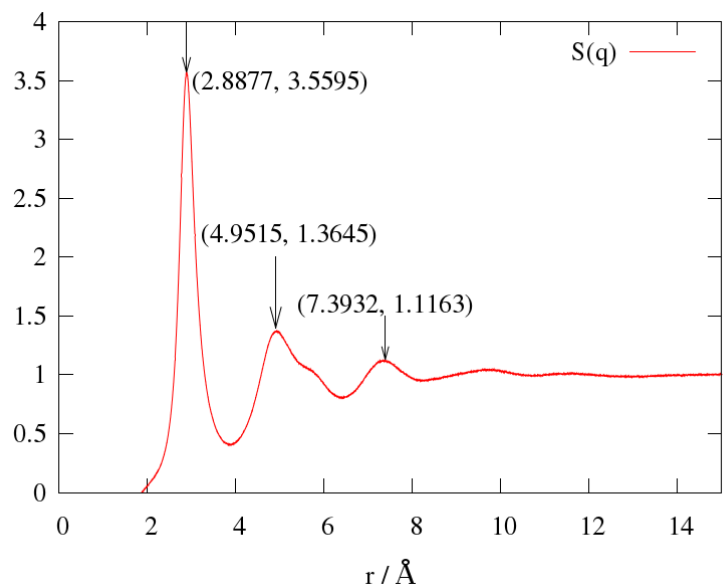
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Report:

In this project, fully glassy rods of composition Pd_{42.5}Ni_{27.5}Cu₃₀P₂₀ (at.%), 3 mm in diameter and 30 mm long, were prepared. Samples with height:diameter ratio of 2:1 were cut from the cast rods. Uniaxial compression tests were conducted at elevated temperature under flowing argon and constant-displacement-rate up to different inelastic strains (2%, 10%, 20%, 30% and 50%) and applying different strain rates (10^{-4} , 10^{-3} s⁻¹). Full elasticity tensor was determined by RUS to ensure they were anisotropic. The aim of the proposal was to check the structural anisotropy expected in these samples.

The experiments were performed as scheduled and the whole set of prepared samples was measured. The pair distribution functions of the samples was calculated at different sectors of the images obtained from the 2D detectors in order to determine the structural anisotropy characterizing the position of the different atomic shells in the amorphous structure.



The determination of the change of the parameters determining the amorphous structure was not found to follow any consistent trend in the samples. This was attributed to the impossibility of reaching the desired precision as the estimation of the errors due to the small tilt of the experimental set-up were of the same order as the tiny structural anisotropic changes in the samples. The work is still in progress with the analysis of a complementary data from an experiment realized in ALBA synchrotron on the same samples.