

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.

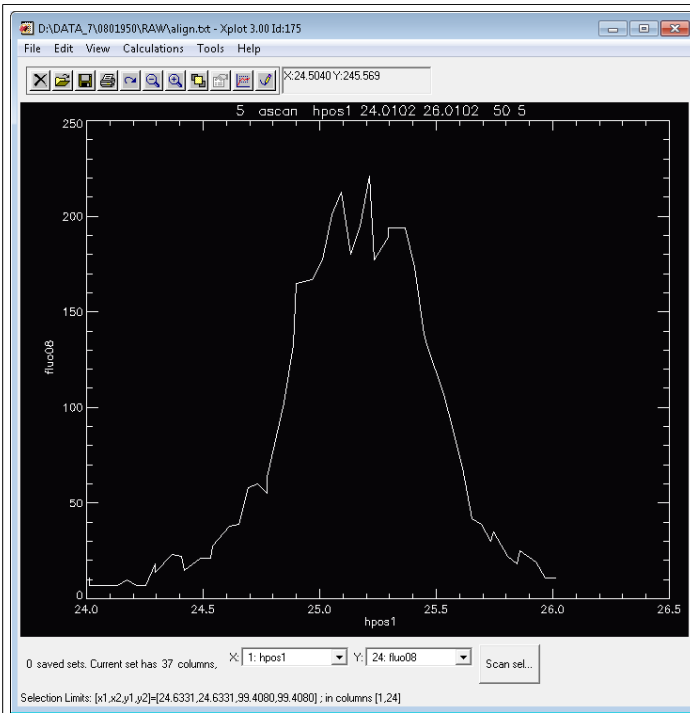


	Experiment title: Local site of Er ³⁺ ions in transparent glass ceramics silica-based optical fibers	Experiment number: 0801950
Beamline: bm08	Date of experiment: from: 30-8-13 to: 3-9-13	Date of report: 30-10-13
Shifts: 12	Local contact(s): F. d'Acapito	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Francesco d'Acapito (*) Wilfried Blanc		

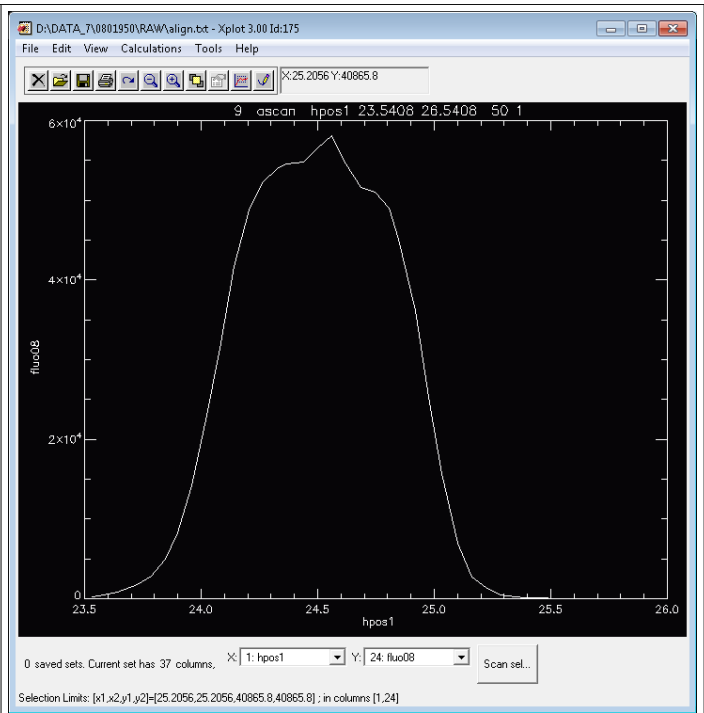
Report:

Exp 0801950 aimed at determining the site of Er³⁺ ions in optic fiber preforms. The glass composing the fibre was silica with additions of SrO in order to promote the formation of nanostructures in the glass that have been shown in previous literature to concentrate the Rare Earth atoms. XAS data at the Er-L₃ and Sr-K edges have been collected using a microbeam (200*200 μm) and fluorescence detection. This fact, together with the 16 bunch mode of the machine, lead to a low intensity beam and to the necessity of carrying out long integration on all the samples in order to achieve a satisfying Signal to noise ratio.

All samples were prepared with an Er concentration in the doping solution of 0.01 mole/l whereas the Sr concentration was 0.1, 0.5 and 1 mol/l. For comparison also a sample with Mg (0.5 mol/l) was collected. Some profiles of the dopant concentration are shown in the picture below:

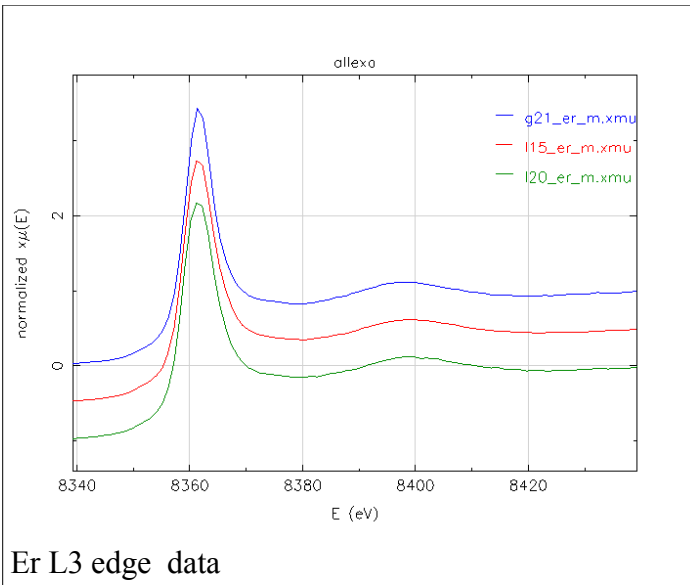


Horizontal scan of a typical sample just above the Er-L3 edge

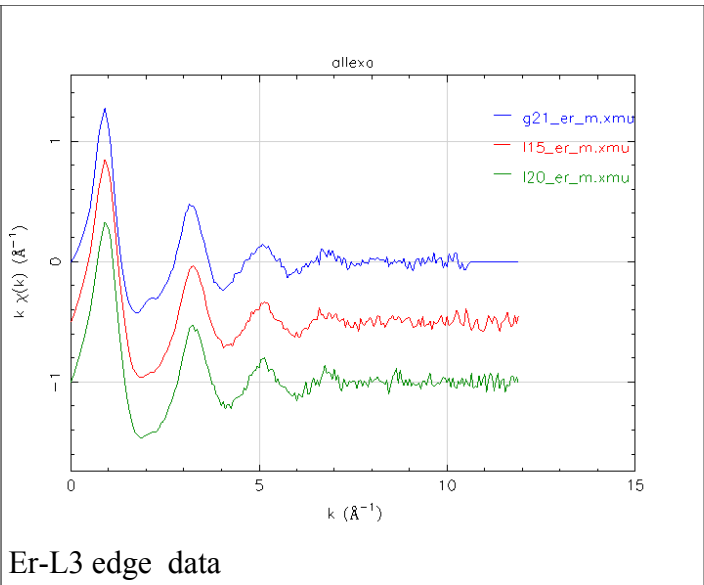


Horizontal scan of a typical sample just above the Sr-K edge.

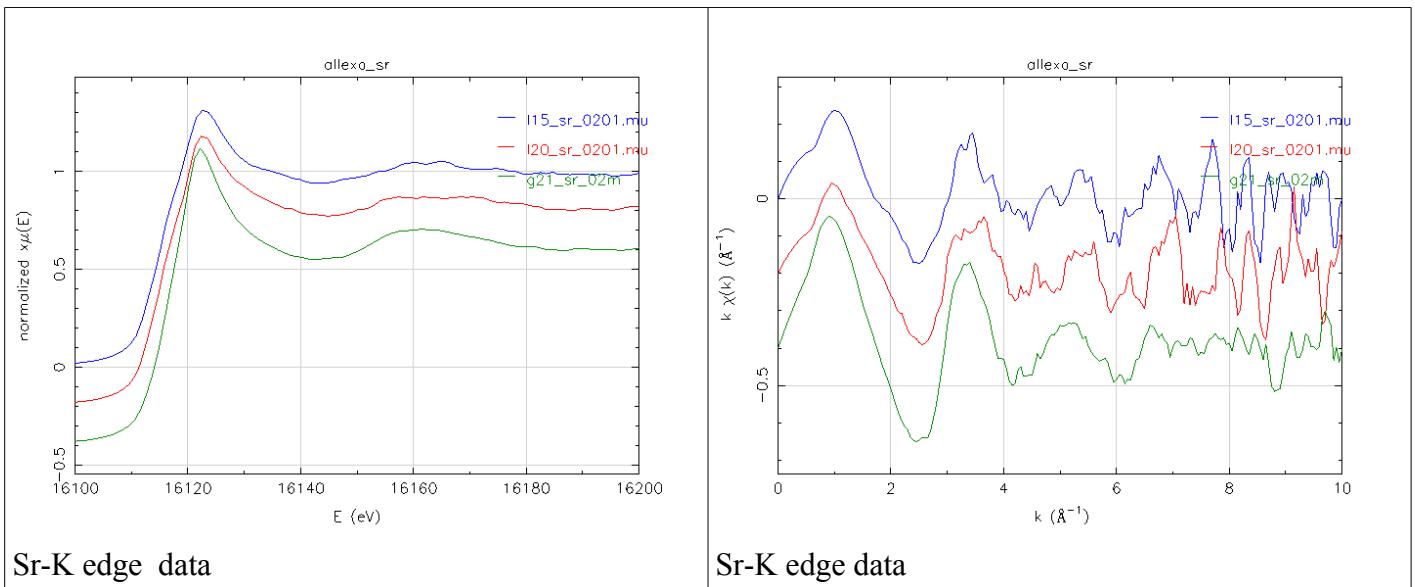
The following picture shows some of the XAS data collected



Er L3 edge data



Er-L3 edge data



Spectra at the Er-L3 edge have a better quality and suitable for a complete quantitative analysis and will permit to state whether or not a defined Er-Sr correlation takes place in the material. Data at the Sr-K edge present a higher noise presumably due to a more marked inhomogeneity of the sample. Only a limited amount of information will be derived from this dataset.

