



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 original report should be sent, together with 5 reduced (A4) copies, to the User Office.

In addition, please send a copy of your file as an e-mail attachment to reports@esrf.fr, using the number of your experiment to name your file. This will enable us to process your report for the ESRF Annual Report.

Reports accompanying requests for additional beam time

If your report is to support a **new proposal**, the original report form should be sent with the new proposal form, and a copy of your report should be attached to each copy of your proposal. 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.
- bear in mind that the report will be reduced to 71% of its original size. A type-face such as "Times", 14 points, with a 1.5 line spacing between lines for the text, produces a report which can be read easily.



	Experiment title: Non-dipolar effects in high-energy XPS excited by XSW	Experiment number: SI-750
Beamline: ID32	Date of experiment: from: 03-July-02 to: 09-July-02	Date of report: 31-Aug-02
Shifts: 20	Local contact(s): Tien-lin Lee	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): Frank Schreiber Stefan Sellner Alexander Gerlach Tien-lin Lee		

Report:

Since the experiment was performed only in July, the present report, written in August 2002, naturally contains only preliminary results and conclusions.

The analysis of the data is still underway. At this point, we can say the following:

- 1) As proposed, we prepared monomolecular (“coherent”) as well as thick (“incoherent”) films on Cu(111) and took XSW data with XPS and Auger detection.
- 2) The data taken on the Cu(111) Bragg reflection were in most cases of good quality. Specifically, the data from fluorine exhibit a good signal to noise ratio. The first rough analysis indicated that the coherent fraction and the coherent position can be determined with decent accuracy, and that the non-dipolar corrections for the 1s photoelectrons can be determined from a comparison of XPS and Auger data, although the determination of both the amplitude and the phase of the non-dipolar correction are generally challenging.
- 3) Some data sets, however, suffered from instabilities of the synchrotron beam and also from instabilities of the electron analyser. We understand that the electron analyser has a history of problems of this type, which we feel would make a general overhaul or replacement of this vital piece of equipment desirable on a future occasion. In addition, problems with the sample heater, which ultimately had to be replaced, caused a delay of about one day.

Thus, in order to obtain data on the Cu(111) reflection of good quality, we had to invest more time than one would usually expect. Therefore, we did not have a chance to perform experiments exploiting the Cu(222) reflection, which would have been desirable.

While we consider the beamtime relatively successful under the given circumstances, we feel that experiments requiring a UHV environment, baking the chamber, and a careful sample preparation as is the case for our experiment, will greatly benefit from the extension of the ID32 hutch. Decoupling of the UHV chamber from other pieces of equipment will make these experiments much more efficient.

We wish to acknowledge the excellent support by our local contact, Tien-lin Lee.

We are presently in the process of analysing the data, which we feel are of sufficient quality to warrant publication.

