EUROPEAN SYNCHROTRON RADIATION FACILITY

INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

ESRF

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 using the **Electronic Report Submission Application:**

http://193.49.43.2:8080/smis/servlet/UserUtils?start

Reports supporting requests for additional beam time

Reports can now 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.

ESRF	**Experiment title:** Study of strain and chemical gradients at interfaces in Au/Ni(111) multilayers by means of Diffraction Anomalous fine Structure	**Experiment number**: 02-02-84
Beamline D2AM	**Date of experiment**: from: 30/11/1998 to: 05/12/1998	**Date of report**: 23/10/02
Shifts: 18	**Local contact(s)**: Hubert Renevier	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

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Report:

This work was published in PHYSICAL REVIEW B, VOLUME 64, 125414
Paper title: "Interfacial structure in (111) Au:Ni multilayers investigated by anomalous x-ray diffraction
Authors : T. Bigault, F. Bocquet, S. Labat, O. Thomas and H. Renevier

Received 16 February 2001; published 10 September 2001
DOI: 10.1103/PhysRevB.64.125414 PACS number(s): 68.35.Dv

Abstract:
We have investigated the structure of buried interfaces in (111) Au:Ni multilayers. Conventional x-ray diffraction at constant energy as well as anomalous x-ray scattering across the Ni absorption *K* edge have been used. Whereas the fitting of the spectra at a single energy leads to two different possible interfacial structures, the anomalous diffracted intensity variation unambiguously favors a model with an interfacial concentration gradient at one interface. The multilayer presents an intermixed region extending on six atomic planes around the Ni/Au interface, whereas the Au/Ni interface is chemically abrupt. This structure can explain the unusual stress-strain relation previously reported on this system.