



## 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](mailto: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.

---

Postal address: User Office, ESRF, B.P. 220, F-38043 GRENOBLE Cedex, France

Street address: 6 rue Jules Horowitz, F-38043 GRENOBLE Cedex

Telephone: +33 (0)4 7688 2552; Fax: +33 (0)4 7688 2020; e-mail: [useroff@esrf.fr](mailto:useroff@esrf.fr)



<b>Experiment title:</b> <i>Sub-cellular quantitative imaging of stable platinum introduced in human cancerous cells cultured for Photon Activation Therapy.</i>	<b>Experiment number:</b> LS-1714
<b>Beamline:</b> ID22	<b>Date of experiment:</b> from: 29/9/2000 to 3/10/2000
<b>Shifts:</b>	<b>Local contact(s):</b> Bohic Sylvain
<b>Date of report:</b> 01/09/2001  <i>Received at ESRF:</i>	

**Names and affiliations of applicants** (\* indicates experimentalists):

*Corde Stéphanie*\*, Equipe d'accueil RSRM, UJF et CHU Grenoble, France  
*Balosso Jacques*\*, Equipe d'accueil RSRM, UJF et CHU Grenoble, France  
*Elleaume Hélène*\*, Equipe d'accueil RSRM, UJF et CHU Grenoble, France  
*Estève François*\*, Equipe d'accueil RSRM, UJF et CHU Grenoble, France  
*Le Bas Jean-François*, Equipe d'accueil RSRM, UJF et CHU Grenoble, France  
*Charvet Anne-Marie*, Equipe d'accueil RSRM, UJF et CHU Grenoble, France

**Report:**

Background

Dose enhancement in human radiotherapy is a proven way to improve tumor local control, but it is limited by healthy tissue tolerance. Continuing researches are done to improve tumor lethal damages with respect of surrounding tissues (drug sensitization; contrast mediated dose enhancement, ...). Two approaches are particularly attractive, the use of high RBE\* ion beams and tumor targeted irradiation sources as classical brachytherapy<sup>s</sup> or metabolic radiation therapy<sup>f</sup>. The Photon Activation Therapy (PAT) is a combination of these two approaches: a selective excitation of high-Z compound fixed inside DNA tumor should allow radio-toxicity enhancement, thanks to the increase of local dose deposition. Actually, photon-stimulation of these heavy elements induces ejection of an internal electron by photoelectric effect. The following electronic rearrangement may lead to Auger electrons cascades. This phenomenon, predominant with light elements, occurs with lower probabilities with high-Z atoms; nevertheless, energies needed for their resonant excitation are higher and consequently suitable for external radiotherapy. Because of their very short range, these Auger electrons could be very toxic for tumor cells, but only if they are released in the close vicinity of their DNA. This experiment was designed to measure and localize the cellular platinum contain. Nuclear and cytoplasmic contain were discriminated.

