

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.



	Experiment title: Mechanism of conductivity variation in organic memristor by X-ray reflectometry measurements	Experiment number: SC-2708
Beamline: ID10B	Date of experiment: from: 01/04/2009 to: 07/04/09	Date of report: 24/12/09
Shifts: 18	Local contact(s): Dr. Oleg Konovalov	<i>Received at ESRF:</i>

Names and affiliations of applicants (* indicates experimentalists):

- 1. Victor Erokhin*, CNR-INFN and Department of Physics, University of Parma, Italy.**
- 2. Svetlana Erokhina*, Department of Physics, University of Parma, Italy.**
- 3. Yuri Gunaza*, Department of Physics, University of Parma, Italy.**
- 4. Laura Pastorino*, University of Genoa, Italy.**
- 5. Tatiana Berzina*, CNR-INFN and Department of Physics, University of Parma, Italy.**
- 6. Paolo Camorani*, Department of Physics, University of Parma, Italy.**

Report:

Electrochemical control of conductivity in an organic memristor: A time-resolved X-ray fluorescence study of ionic drift as a function of applied voltage

Tatiana Berzina, Svetlana Erokhina, Paolo Camorani, Oleg Konovalov, Victor Erokhin, and M.P. Fontana

Grazing incidence X-ray fluorescence measurements were applied for a time-resolved study of an organic memristor conductivity variation mechanism. Comparison of these results with electrical measurements has allowed to conclude that the variation of the fluorescence intensity of Rb ions is directly connected to the ionic charge transferred between the

conducting polymer and solid electrolyte, which made up the device. In addition, the conductivity of the memristor was shown to be the function of the transferred ionic charge.

ACS Appl. Mater. Interfaces, 1, 2115-2118 (2009).