



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: Structure vs Performance	Experiment number: ME161
Beamline: ID11	Date of experiment: from: 11 th April 2001 to: 14 th April 2001	Date of report: 31 st August 2002
Shifts:	Local contact(s): Dr. Ann Terry	<i>Received at ESRF:</i>
Names and affiliations of applicants (* indicates experimentalists): S. Rastogi*, D. La Camera*, F.van der Burgt*, A.E. Terry*, S.Z.D. Cheng		

Report:

Polymorphism is a general phenomenon observed in polymers. Syndiotactic polypropylene also exhibits polymorphism and four limited-ordered modifications have been proposed so far. These modifications are commonly known as Form I, II, III and IV. Form I is normally obtained on cooling an isotropic melt at atmospheric pressure. By in-situ X-ray studies performed at elevated pressure-temperature, we show that, for the first time, Form II can be also obtained on cooling the isotropic melt at high pressures. When investigated by NMR, the Form II thus obtained, is found to be free from conformational defects. We observed that above 1.5kbar, the melting temperature of Form II is higher than that of Form I. This is in contradiction to the melting behaviour of the two different forms below 1.5kbar, that is, the melting temperature of Form II (crystallized at pressures greater than 1.5kbar) is found to be always lower than for Form I below 1.5kbar. On cooling from the isotropic melt, below 1.5kbar, the sample crystallizes in the ordered Form I. These findings suggest presence of a thermodynamically stable region for Form II in the pressure-temperature phase diagram. The difference in crystallization kinetics of the two phases has been also followed at different pressures.

For details please see: *Macromolecules* 2001, 34(22), 7730-7736

