EUROPEAN SYNCHROTRON RADIATION FACILITY

INSTALLATION EUROPEENNE DE RAYONNEMENT SYNCHROTRON

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 via the User Portal:

https://wwws.esrf.fr/misapps/SMISWebClient/protected/welcome.do

Reports supporting requests for additional beam time

Reports can 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:** **Powder X-ray diffraction study of the transition metal monogermanides**	**Experiment number**: HC1623
Beamline:	**Date of experiment**: from: 19.09.2014 to: 23.09.2014	**Date of report**: 23.11.2014
Shifts:	**Local contact(s)**: DIADKIN Vadim	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

1) DIADKIN Vadim, SNBL-CRG (CH) ESRF 6 rue Jules Horowitz BP 220 - GRENOBLE
2) KUCHUGURA Mariia, Saint-Petersburg State University
Neutron and Synchrotron Physics, Petrodvorets, RUS - ST PETERSBURG
3) IASHINA EKATERINA, Saint-Petersburg State University
Neutron and Synchrotron Physics, Petrodvorets, RUS - ST PETERSBURG
4) SERGEY GRIGORYEV, DNR - St Petersburg Nuclear Physics Institute Gatchina RUS - ST PETERSBURG
5) VALKOVSKIY Gleb, Saint-Petersburg State University
Neutron and Synchrotron Physics, Petrodvorets, RUS - ST PETERSBURG

Report:

In order to complete the study started a year ago at ID31 we have done powder x-ray diffraction experiment at BM01A for MnxCo1-xGe with the concentration x being equal to 1, 0.9, 0.8, 0.4, 0.3, 0.2, 0.1, 0.05 and also for FexCo1-xGe with the concentration x being equal to 0.9, 0.8, 0.6, 0.7. CryoStream 700+ was used to control temperature in the range 80-500K together with PILATUS@SNBL diffractometr recording 2D diffraction powder patterns every 2K.

2D diffraction patterns were processed with new SNBL/DUBBL software to obtain 1D diffraction diagrames that were further analyzed with FullProf. Temperature evolution of the unit cell dimention was fitted with Debay model similar to [1]. Concentration dependence of the model parameters is summarize in Figure 1 for both ID31 and BM01A.

A complete analysis of the data collected is in progress; the results will be published with magnetic data.

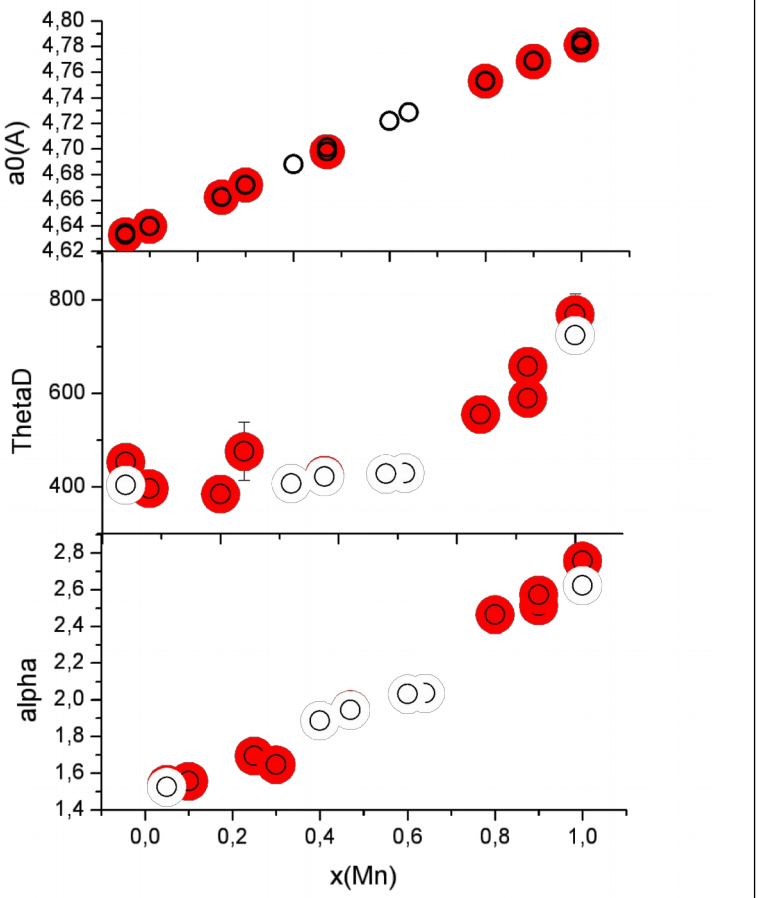

Figure 1.
Plate 1. the concentration dependence of the low-temperature lattice parameter a0;
Plate 2. the concentration dependence of the thermal expansion coefficient alpha;
Plate 3. the concentration dependence of the Debye temperature ThetaD (for MnxCo(1-x)Ge samples).

1. Dyadkin, V., Grigoriev, S., Ovsyannikov, S. V., Bykova, E., Dubrovinsky, L., Tsvyashchenko, A. et al. Crystal structure and thermal expansion of Mn1-xFexGe Acta Cryst., B70, 676-680, 2014