EUROPEAN **S**YNCHROTRON **R**ADIATION **F**ACILITY

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:** X-ray microscopy investigation of the phase diagram of aqueous montmorillonite clay gels	**Experiment number**: SC919
Beamline: ID21	**Date of experiment**: from:16 november 2001 to: 20 november 2001	**Date of report**: February 8, 2002
Shifts: 12	**Local contact(s)**: Dr. Wolfgang LUDWIG	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

Isabelle Bihannic*, Laboratoire Environnement et Minéralurgie, ENSG-INPL, UMR 7569, BP 40, 54501 Vandoeuvre Cedex 01, France.

Laurent Michot*, same affiliation

Bruno Lartiges*, same affiliation

Pierre Levitz*, Laboratoire de Physique de la Matière Condensée, CNRS, Ecole Polytechnique, 91128 Palaiseau, France.

Delphine Vantelon*, ETHZ, Dept. of Environmental Sciences, Soil Chemistry, Grabenstrasse 3, CH-8952 Schlieren, Switzerland

Report:

This experiment carried out on ID21 in November 2001 was a continuation of experiment SC774 performed in November 2000. Twelve shifts were allocated as a block allocation for the three experiment we proposed.

In the previous experiment (SC774), the existence of superstructures in clay gels was evidenced for the first time. The aim of this run was to confirm the previous observations, and to fully explore the phase diagram solid concentration/ionic strength.

The first objective was reached : an image displaying the same kind of superstructure as last year was recorded on a montmorillonite gel. In addition, a second image obtained on a gel of Laponite (Figure 1) revealed that such features could also be present in synthetic systems formed by monodisperse platelets.

Unfortunately, due to experimental difficulties (presence of impurities that sticked to the kapton cell window when placed under vacuum, Figure 2), it was impossible to carry out the

scheduled experimental program and to reach a better understanding of the structure of gels formed by charged colloidal platelets.

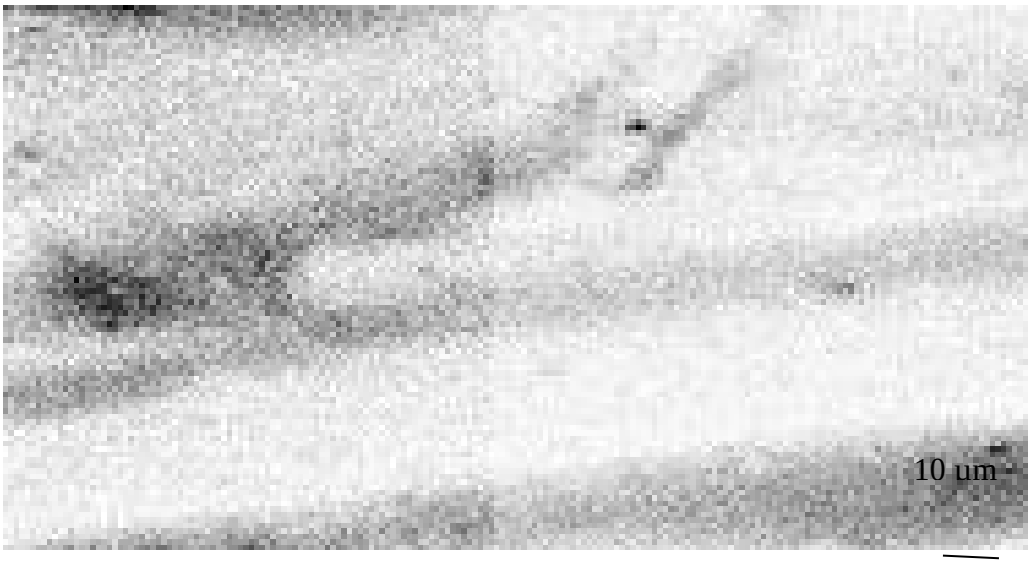

Figure 1. Silicon fluorescent yield mapping of a Laponite clay gel at 4 wt% (resolution : 1 µm, dwell time : 500 msec, 2.75 keV).

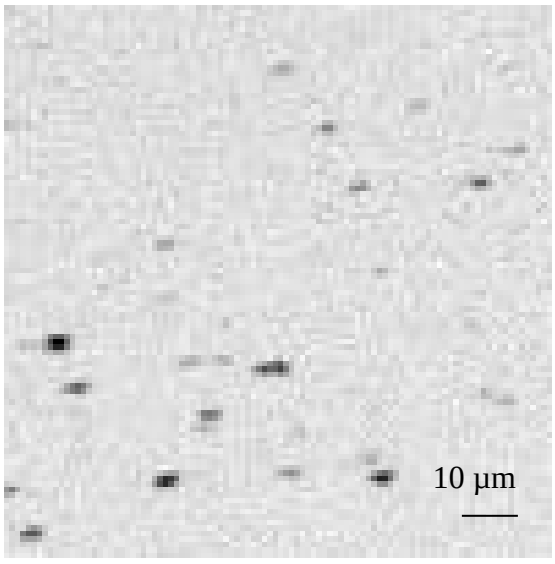

Figure 2. Example of the impurities that polluted the kapton window of the cell when placed under vacuum (resolution : 1 µm, dwell time : 500 msec, 2.75 keV).