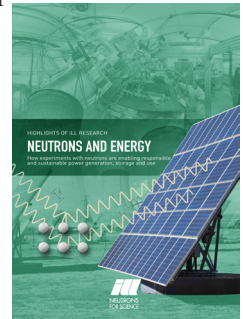


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In brief

- The wide angle spin-echo spectrometer WASP - the last instrument of the ILL Millennium Programme - is planned to be finished in about a year, with delivery scheduled for the end of 2016. More on p. 6.
- Now available for users: new high pressure equipment for structural and dynamical studies on biological samples in solution (high pressure cells). The new cells withstand both high temperatures and high pressures. More on p. 8.
- We are producing a “Neutrons and Energy” brochure. The booklet is the seventh in a series devoted to neutron techniques in different research areas. More on p. 2.



Facility news

Two prestigious prizes for ILL PhD Student Matteo Bianchini

Back in April, Matteo Bianchini – a PhD student in the ILL Diffraction Group - was awarded the Graduate Student Silver Award at the 2015 MRS spring meeting - probably the most important materials research meeting in the world. MRS awards “seek to recognize students of exceptional ability who show promise for significant future achievement in materials research.”

And as good fortune often comes in pairs, it has just been announced that Matteo has also won the PANalytical Award for 2014 for an article, which the judges described as “a thorough investigation

that required an exceptional understanding of crystallography”.

The winning article¹ describes in detail Matteo's work on the properties of a promising new Li-ion system.

The study elucidated the electrochemical behaviour and 3-dimensional structures of this system, using *in situ* and *ex situ* neutron and X-ray diffraction.

The ILL proudly congratulates Matteo on his achievements! ■



Graduate student Silver award recipients (Matteo Bianchini is the first on the left on the top row).

¹Multiple phases in the ϵ -VPO₄O-LiVPO₄O-Li₂VPO₄O system: a combined solid state electrochemistry and diffraction structural study, published in the *Journal of Materials Chemistry*, DOI 10.1039/C4TA01518E.

New “Neutrons and energy” brochure

Modern society has escalating demands for energy. These are now draining the limited resource base and degrading living conditions across the planet. We need new and more efficient technologies capable of extracting energy from both fossil and non-fossil fuels, whilst decreasing CO₂ emissions. These are often based of advanced materials with complex structures.

Neutrons are crucial for the understanding of these new materials and there are important projects on-going at the ILL. Some of them are summarised in our new brochure “Neutrons

and Energy - How experiments with neutrons are enabling responsible and sustainable power generation, storage and use”. This booklet is the seventh of a series devoted to the application of neutron techniques to different research areas.

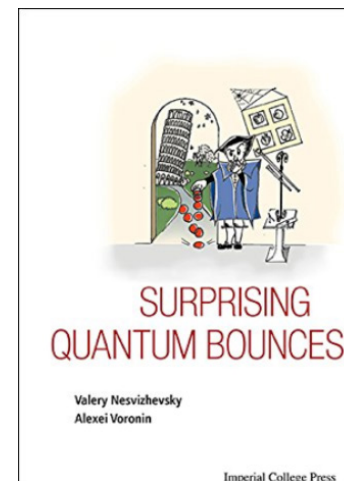
Contact us if you would like to receive a copy. Alternatively, you will soon find a pdf file on the ILL web-site <http://www.ill.eu/quick-links/publications/topical-brochures/>. ■

Surprising Quantum Bouncing

A comprehensive textbook on quantum mechanics has been published recently by Imperial College Press [1]. The content is entirely based on results obtained at the ILL, or with ILL involvement.

Imperial College Press has announced this publication worldwide:

“Surprising Quantum Bounces explores the fundamentals of quantum mechanics using a single phenomenon: quantum bounces of ultra-cold particles. Various examples of such “quantum bounces” are gravitational quantum states of ultra-cold neutrons (the first observed quantum states of matter in a gravitational field), the “neutron whispering gallery” (an observed matter-wave analog of the whispering gallery effect well known in acoustics and for electromagnetic waves), and gravitational and whispering gallery states for anti-matter atoms that remain to be observed. These quantum states are an invaluable tool in the search for additional fundamental short-range forces, in exploring the gravitational interaction



and quantum effects of gravity, in probing physics beyond the standard model, and in furthering studies into the foundations of quantum mechanics, quantum optics, and surface science.

This unique book is full of eye-catching problems, highly intuitive and rigorous description, a stimulating set of problems, and suggestions for individual research. Although this book is primarily addressed to graduate and postgraduate students of quantum mechanics, it is also for anyone else who wants to discover or rediscover the mysterious and wonderful

world of quantum physics.”

The textbook has been already recommended for students in several major universities; it is of particular interest for everyone involved in neutron research. ■

[1] V.V. Nesvizhevsky and A.Yu. Voronin, *Surprising Quantum Bounces*, Imperial College Press, London, UK (2015).

Partnership takes aim at breast cancer

T. Forsyth (ILL & Keele University, UK), E. Mitchell (ESRF) and M. Chalmers (ESRF).

A project carried out between the ILL, ESRF and AstraZeneca (UK) is investigating the structural characteristics of proteins relevant to the development of breast cancer.

Breast cancer is the most common form of cancer in women, accounting for roughly one in seven female cancer deaths worldwide. The condition can develop in many different ways but it begins when cells in the breast begin to divide and grow in an abnormal way.

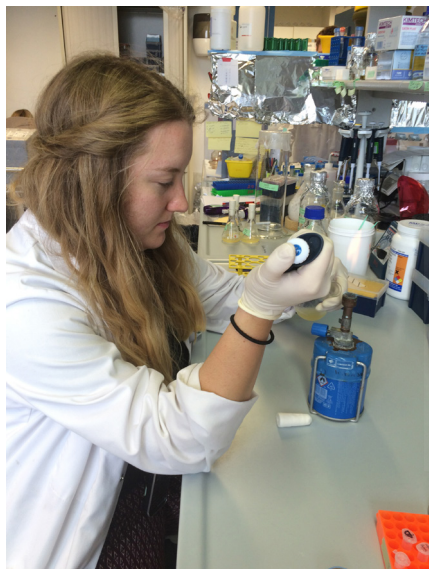
Survival rates after diagnosis are improving, however, thanks to earlier detection, increased understanding of the underlying biology and better treatments. Pharmaceutical firm AstraZeneca has pioneered lifesaving breast cancer treatments for the past 50 years, and increasingly is undertaking research into novel hormonal and targeted agents. The firm has recently partnered with the ILL and the ESRF to work with a placement student for one year.

Purifying proteins

Katherine Moynihan, an undergraduate biochemistry

student at the University of Bath in the UK, arrived on the EPN Campus in September 2014. She has been studying a protein called TRIM24, which is a histone reader involved in the regulation of gene expression. "TRIM24 is known to stabilise the interaction between an oestrogen receptor and chromatin, which leads to up-regulation of the oestrogen response elements that promote cellular proliferation," she explains. "Over-expression of TRIM24 has subsequently been linked to decreased survival in breast cancer patients."

Knowing that TRIM24 is involved in tumour growth in breast cancer, the interaction between TRIM24



Katherine Moynihan working in the Life Sciences Group.

and whole nucleosomes presents a potential drug target. Katherine's project therefore involves solution scattering and crystallographic studies of TRIM24 both in the native state and in complex with the nucleosome. Specifically she has been studying the nature of the interactions between whole

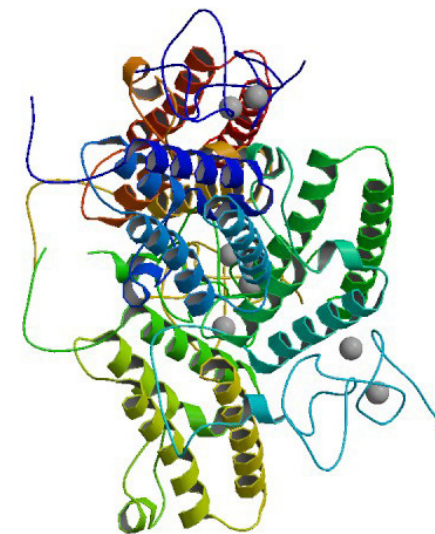
reconstituted nucleosomes and different forms of TRIM24. She has prepared samples from this system having various specifically deuterated components and now awaits ILL beamtime on D22. In parallel with this, high resolution crystallographic data has been collected using ESRF's MASSIF beamline, and SAXS data will also be collected on BM29. "The main issue has been difficulty in getting TRIM24 to bind to the nucleosomes, so I've spent most of my project purifying proteins!" says Katherine. The experience of working in a real-life research environment has taught her much more than she has learned in university teaching labs, she adds. "I've had superb support and advice from Juliette Devos, Michael Haertlein and others in the Life Sciences group and in the ESRF and EMBL. That given, it's very self directed and there is a lot of freedom. Before coming here I thought that a research career was probably

not for me, but now I'm not so sure."

Industry collaboration

The ILL and ESRF are keen to establish collaborations with industry, both as partnerships and for proprietary services. "This project with AstraZeneca, in addition to training a young future researcher, shows off the complementarity of ILL's deuteration facility (D-Lab), its neutron facilities, the power of combined approaches where both neutrons and X-rays are used together, and the array of technology platforms available in the Partnership for Structural Biology (PSB). This is increasingly important in providing a full view of bio-machines for applications in the biotechnology and pharmaceutical sectors". "Projects like this are benefitting

massively from ILL's novel capabilities in the Life Sciences as well as state-of-the-art instrumentation." says Reto Walser from AstraZeneca in Alderley Edge in the UK. ■



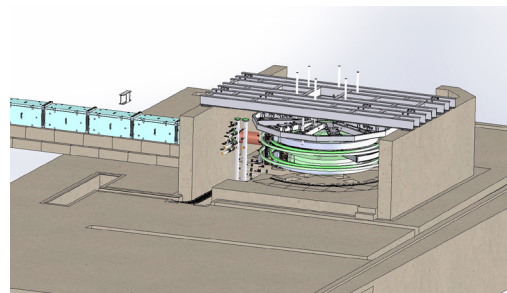
TRIM24 Asymmetric Unit.

Instrument & technical upgrades

Update on the wide angle spin-echo spectrometer WASP

P. Falus and P. Fouquet (ILL)

The wide angle spin-echo spectrometer WASP will be the last instrument of the ILL Millennium Programme. It may be the Programme's youngster, but it weighs in as a serious heavyweight. Spin-echo spectrometers are based on technology invented at ILL by Ferenc Mezei on WASP's predecessor IN11: in short, they allow the measurement of structural and magnetic rearrangements on pico- to microsecond time scales. There are at present two spin-echo machines at the ILL, IN11 and IN15. Once WASP is up and running it will be entrusted to the IN11 team, whereas IN15 is just finishing a substantial renovation itself.



IN15 provides the world's best resolution using small-angles, whilst IN11 is a wide-angle instrument with rather limited resolution. WASP will provide a resolution comparable to that of the pre-upgraded IN15, but using wide angles, thereby giving access to high momentum transfers of up to 4 \AA^{-1} . Previous users of IN11 can expect 50x higher intensity for similar measurement conditions. IN15 is useful for studying large samples at biomolecular length scales. WASP, on the other hand, will allow for studies at molecular or even atomic length scales. In simple terms, it will be examining small molecules in movement!

In terms of practical applications, WASP will be contributing to research into magnetic systems, liquids confined in nanoporous materials, fuel cells, etc.

WASP is the acronym for "Wide-Angle Spin-Echo". Its design was inspired by SPAN, an instrument built in Berlin in the nineties, and one of the first instruments to have two superimposed coils. The WASP and SPAN designers had intense and fruitful exchanges, although SPAN is no longer in operation.

The WASP instrument was first envisaged at the start of the Millennium Programme in 2001 by Georg Ehlers. In 2003 Peter Fouquet took over responsibility for the project and has been pushing it for about ten years, which is the time that has been necessary to secure the funding and to finish the H5 renewal project on which WASP depends. Peter Fouquet handed over to Peter Falus at the end of 2013, who is now the scientist responsible for WASP. David Bazzoli is the technical project manager.

Much of the infrastructure required for WASP is already in place around the guide hall ILL 22 extension, where WASP will be located. A new cooling circuit and a transformer have been installed and they will be shared with IN15. When running at full power WASP will be using 0.6 MW of electricity at peak current - its two magnetic coils weigh 20 tonnes each! They are due to be delivered in the autumn - with each coil shipped in 4 different pieces weighing 5 tonnes each, to allow for convenient handling with the existing cranes. The main magnetic coils will have to be lowered in through the ILL 22 roof! In fact, the ILL 22 extension was specially designed around WASP's vital statistics.

It won't be an easy project and is planned to take over a year in all, with delivery scheduled for the end of 2016. ■

Low-background option and new analysers on IN16B

B. Frick and M. Appel (ILL)



Photo 1: IN16B in its 'low-background' mode, placed in a 'side-of-guide' position analogous to the old IN16.

The first three weeks of the first reactor cycle were used on IN16B to commission a new instrument mode - the 'low-background (LB)' option of the Si(111) configuration, for which the 30-ton weight of IN16B has to be moved to the guide side position (photo 1). This manoeuvre is critical and takes a lot of manpower and time; it will therefore only be programmed for a full cycle and on condition that there are a sufficient number of experiments requiring the LB mode.

Commissioning was successful and confirmed the performance envisaged. It was followed by three successful official user experiments before the unforeseen reactor shutdown in May.

The LB mode shows a signal-to-noise ratio of up to 6000, which is 2 to 3 times higher than in the standard 'high-flux (HF)' mode at the guide-end-position (where however the flux is roughly a factor of 8 higher).

The exact numbers still have to be worked out, but these characteristics were predicted by analytical estimations and by taking into account the narrow incident wavelength spectrum reflected from the old vertically focusing IN16 PG002 deflector.

We were able to confirm that the wavelength band is too narrow to fill the full energy transfer range offered by the Doppler drive; this can be

compensated to some degree (with flux loss around the elastic region) by rotating the PST chopper three times faster. There is lower background noise because of the lower incident flux on the PST, located only 35 cm from the sample. The improvement in signal-to-noise on IN16B in the LB mode, compared to the old IN16, can be traced back to the suppression of the higher orders by a selector instead of a filter near the instrument, to more efficient neutron optics, and to the secondary spectrometer in vacuum.

During this cycle we were also able to install a further three new and much taller IN16B analysers and for the start of the second cycle all 6 wide-angle analysers are now in place. The new analysers are nearly 3 metres high (photo 2) and are equipped with Si(111) single crystal wafers coated on the rear with gadolinium oxide paint. The wafers are glued under deformation onto the carbon fibre support, which has an absorbing boron-enriched epoxy surface. These new analysers will increase the vertical solid angle for energy analysis and thus provide a higher count rate. The new analysers are now mounted on motorised goniometers which allow for alignment in vacuum and for a choice of focus (either onto the sample or onto the detector). ■

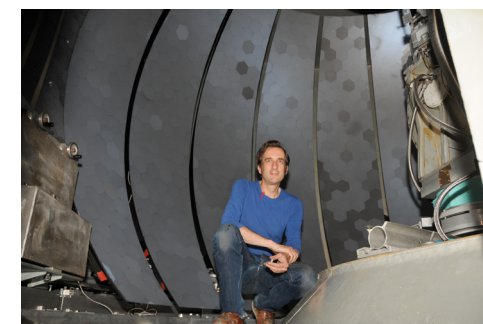


Photo 2: The six new wide-angle analysers of IN16B after installation in the vacuum chamber. About 900 Si(111) single crystal wafers were coated with absorber and assembled under spherical deformation on the support by the instrument technician Richard Ammer.

High pressure equipment for samples in solution

J. Peters (UJF, ILL and IBS)

In 2011 long-term proposal LTP 8-4 was granted beamtime to develop high pressure cells for structural and dynamical studies on biological samples in solution. The project team produced several new cells, designed and tested by the ILL's Services for Advanced Neutron Environment (SANE). Specific funding by the CNRS (*Défi Instrumentation aux Limites 2014*) was obtained for the work and several experiments were carried out on instruments IN5, IN6, IN13, IN16, IN16B and D16, with all the necessary infrastructure installed (high pressure module on NOMAD and a cable for remote controlling the pressure controller). Different types of high pressure cells can cover a range of 0.1 – 700 MPa (0.001 – 7 kbar); some of them allow for a combination of high pressures and high temperatures up to 100°C. The cells are cylindrical in shape corresponding to a sample volume of about 1 ml.

Amongst the first experiments we performed with the new equipment on IN13 we could mention the investigation of a molten globule state (a metastable state intermediate between the folded and the unfolded state) of the enzyme human acetylcholinesterase at around 170 MPa, where molecular dynamics are clearly enhanced [figure1].

The team recently studied lysozyme under high pressure conditions for two different protein concentrations, mimicking the crowded cellular environment at higher concentrations. We found out that the protein's structural and interaction parameters and its dynamical properties are affected by pressure in a nonlinear way [figure 2].

The majority of the biosphere is a high pressure environment. Around 70 % of the marine biosphere is situated at depths below 1000 m, i.e. at pressures of 0.1 MPa or higher. To survive in these environments, deep-biosphere organisms

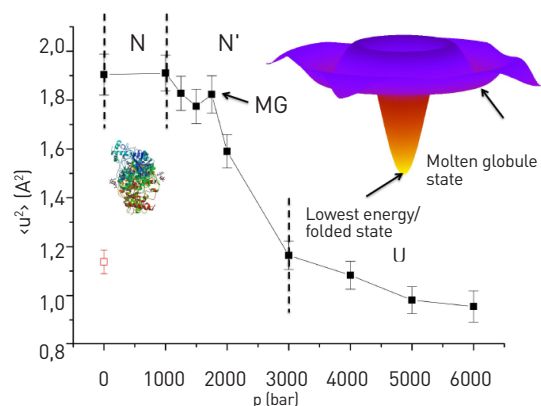


Figure 1: Mean square displacement of human Acetylcholinesterase, measured on IN13, at different pressures up to 6 kbar. The letters illustrate the 4-step-model, N being the native, N' the transitional intermediates, MG the molten globule and U the unfolded state.

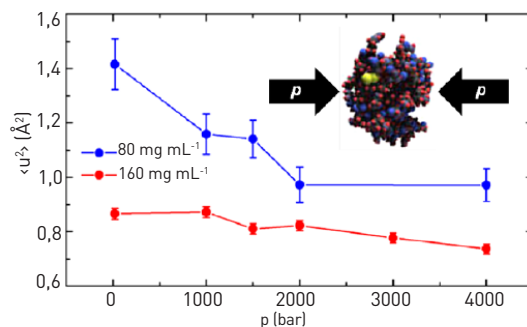


Figure 2: The influence of high hydrostatic pressure on the internal sub-nanosecond dynamics of highly concentrated lysozyme in aqueous solutions was studied by elastic incoherent neutron scattering (EINS) on IN13 up to pressures of 4 kbar.

have adapted to life at high pressure. In vitro studies have shown that the activity of certain proteins originating from deep-sea organisms is less affected by high pressure than the activity of surface organism enzymes.

The genetic and structural bases for their resistance to pressure are still unknown however. As part of a specific ANR project we decided to use elastic incoherent neutron scattering to shed light on the adaptation mechanisms of deep-sea microbes [3]. Our observations were incomplete however, as the experiments could not be performed at native temperatures (ca. 85°C, for *T. kodakarensis* and *T. barophilus*), as the high temperatures were beyond the capacity of the high-pressure cell available. We therefore raised funds from the CNRS for the development of

a new high-pressure cell permitting both extreme conditions. It will be tested within the next cycle on IN13. The high-pressure equipment is available at the ILL and the sample cells can be borrowed from J. Peters (peters@ill.fr). ■

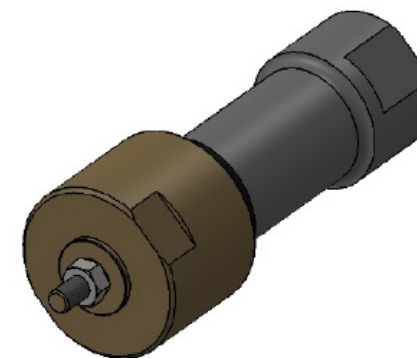


Figure 3: The newly-designed high-pressure cell.

References:

- [1] J. Marion *et al.*, Phys. Chem. Chem. Phys. 17 (2015) 3157 - 3163
- [2] M. ErIkamp *et al.*, J. Phys. Chem. B (2015) accepted for publication
- [3] J. Peters *et al.*, Z. Phys. Chem. 228 (2014) 1121-1133

Event & meeting reports

The 7th FullProf School

ILL, 2-6 March, <http://www.ill.eu/fpschool2015/>
O. Fabelo and J.R. Carvajal (ILL)

Crystallographic studies have significantly contributed to the success and development of different scientific areas, materials science, solid-state physics, chemistry, strongly correlated systems, etc. Among the available programmes for diffraction data analysis, the FullProf suite is one of the packages most widely used by the scientific community working in these fields. The FullProf school has two aims. The first purpose is to present the new features of the FullProf suite. The second is to contribute directly to the training of the upcoming generation of scientists in precise diffraction data treatment. The school focuses on theoretical aspects of diffraction as well as in intensive, hands-on, analysis of diffraction data with the FullProf suite.

After six successful sessions, the edition of the school took place at the ILL from 2 to 6 March 2015. We received around 120 applications for 30 places. Among the candidates there were 17 thesis students and 13 postdocs or seniors, from 13 different countries.

The school focused this year on magnetic structures. This topic was selected after feedback from the applicants. It extended over 5 days. General theoretical lectures were presented at the beginning of the sessions followed by extensive practical sessions. During the first two days the participants selected between different exercises as a function of the topic explained in the theoretical sessions. Over the last three days they worked with their own data under the supervision of the school's tutors (6 from the ILL



and 3 from external institutions). During these sessions the candidates were able to propose changes in the programme, in order to clarify doubts or problems. Special theoretical and practical presentations were given by the tutors in response to the questions raised.

This 7th FullProf School was extremely well appreciated by the attendees. The increasing number of applicants clearly demonstrates that there is a strong demand from the scientific community for training sessions of this sort. The response has motivated our team to organise a second school in 2015 (end of October), centred this time on materials science and micro-structural analysis.

The organisation of this event has helped us attract new scientists to neutron facilities and to the ILL in particular. In order to give the participants a general view of the different instruments available at the ILL a brief visit to the reactor and guide hall was also programmed on the last day. ■

CCP-SAS: Atomistic Modelling for Small-Angle Scattering

ILL, 26-28 May, <http://www.ill.eu/press-and-news/events/ccp-sas-2015/>
A. Martel (ILL)

Molecular simulation is an important technique for analysing and interpreting molecular phenomena across many disciplines. Small-angle scattering (SAS) using X-ray or neutron sources is a valuable method for characterising the shape, interactions, and properties of many soft-matter systems. SAS data is typically modelled using analytical functions and/or dummy-ball (DB) models. These methods are both simple and robust; they have allowed for a tremendous expansion of SAS studies to a wide variety of systems. Atomistic modelling can be used to interpret SAS data and provides structural and physical knowledge unavailable using analytical or DB models. Atomistic models can also allow the use of experimental and computational constraints on the SAS data.

The goal of this three-day tutorial in the ILL-ESRF Science Building at the end of May was to use modern simulation methods and software tools to predict and analyse small-angle scattering data of soft-matter systems, focusing particularly on biological systems. The participants were familiarized with SASSIE¹, a software framework designed to facilitate the use of atomistic modelling to interpret scattering data. The event was essentially designed for the local small-angle scattering biology community and attracted 20 students over the three days. Three members of the CCP-SAS consortium came to



Participants to the SASSIE's tutorial.

Grenoble to present their programme and explain its use. We learned to apply molecular dynamic and Monte Carlo simulations to the crystalline structure (or model) of a biomacromolecule in order to explore the possible conformations of its flexible parts and find the global structure fitting to experimental BioSAS data. This new tool for BioSAS data analysis opens possibilities for combining low-resolution data on structures in solution with high-resolution data obtained by complementary techniques (cryo-electron microscopy, X-ray crystallography, nuclear magnetic resonance or biochemistry). It will be a valuable tool for the best-quality knowledge from our experimental results. ■

¹SASSIE is a product of the CCP-SAS consortium, a UK-USA project devoted to the development of computing tools for the analysis of SAS data.

Announcements for ILL users

Appointing Sample Responsibles and “checking out” samples

In order to avoid samples being left behind after experiments and to ensure better traceability, a new procedure has been introduced to ensure that a Sample Responsible is designated for each experiment and that samples are correctly processed at the end of an experiment .

As is already the case, each experiment will have a designated Sample Responsible. He/she is nominated after the invitations are sent out by the User Office. With the new procedure, two weeks before the official starting date of the experiment, if the designated Sample Responsible is no longer part of the experimental team, an email will be sent to the

Principal Investigator (PI) asking him/her to designate a new one. If no Sample Responsible is designated, the PI will be designated by default – whether or not he/she is present for the experiment. The Sample Responsible is responsible for liaising with the ILL's Health Physics Service (SPR) to ensure that samples are controlled for radiation and properly “checked out” at the end of the experiment.

There are only three acceptable procedures:

- the sample is declared non-active and the Sample Responsible leaves with it;
- the sample is found to be active and is labelled and stored at ILL by the SPR;
- the Sample Responsible

informs the SPR that the sample has been left at the instrument, under the responsibility of the Local Contact.

If, however, a sample is left at ILL without following one of these three procedures, the SPR will send a message to the Sample Responsible with copy to the Local Contact, ten days after the official end of the experiment, asking him/her where the samples are being temporarily stored (or when they will be presented for the compulsory post-experiment radiation monitoring). The Local Contact will ensure that the information is recorded by Health Physics staff. ■

Reimbursement rules

Due to budgetary restrictions ILL is now applying reimbursement regulations more strictly and authorising exceptions less frequently than in the past. It is therefore important that you consult the rules on our web pages before travelling to the ILL for an experiment. The webpages will be kept updated.

<http://www.ill.eu/users/user-guide/reimbursement-procedures/>

We would like to draw your attention to some of these regulations:

- Taxis will not be reimbursed whilst travelling to/from ILL
- Where public transport is available, airport parking fees will not be reimbursed

- Travelling by car is reimbursed at an all inclusive fixed rate
- Car hire, tolls and tunnels are not reimbursed under any circumstances
- All non-standard travel options (extra days, deviations from normal itinerary, ...) should be pre-arranged with the User Office
- Expenses can be reimbursed only if they are corroborated by original tickets and/or receipts containing the date and the price of the trip, including e-tickets
- ...

Very important: Any exceptions to our regulations must be agreed with the User Office before your trip (sco@ill.eu). If this is not the case, do not be surprised if your request for the reimbursement of any exceptional expenses is not accepted. ■

DOI in ILL publications

When you publish results of ILL data - either your own data, data to which you were granted access, or data that were made public - the ILL expects you to cite the DOI reference using the specified format available on the DOI landing page.

Please use the following format, by including it in the list of references:
Martin, J.; Bihannic, I.; Deme, B.; Duval, J. F. L.; Michot, L.; Rotureau, E.

Measurement of Structural Changes in Multi-responsive Core-Shell Polymer Particles; Institut Laue-Langevin (ILL): Grenoble, 2013; DOI:10.5291/ILL-DATA.9-10-1310

If the journal requests a special format, you could use the citation formatter tool provided by DataCite (<http://crosscite.org/citeproc/>) in order to get the citation properly formatted for this journal. ■

Proposal round

Because of a relatively long shutdown of the ILL reactor - planned in winter/spring 2016 - and of the accumulated backlog, it is likely that proposals accepted at the next round will not be granted beamtime before mid June 2016.

Under these changed circumstances, we have decided to **cancel the Autumn 2015 proposal round and its subcommittee meetings** (originally planned on 17-18 November 2015).

The Scientific Council meeting will be maintained on 19-20 November 2015 as planned.

Next proposal round will be:

Proposal deadline:	9 February 2016 (midnight European time)
Subcommittee meetings:	12-13 April 2016
Scientific Council:	14-15 April 2016
Scheduling period:	3 cycles in 2016

Proposals must be submitted via the Electronic Proposal Submission (EPS) system on our new User Club (<https://userclub.ill.eu/cvng>), once you have logged in with your personal username and password. The web interface **will open on 1 January 2016**.

The detailed guidelines for the submission of a proposal at the ILL can be found on the web site: <http://www.ill.eu/users/applying-for-beamtime/electronic-proposal-system/>. In case of problems, you will receive full support from the User Club team. Please allow sufficient time for any unforeseen computing hitches. If you have any difficulties at all, please contact our web-support (club@ill.eu). For other queries, contact the User Office (sco@ill.eu).

Instruments available

The following instruments will be available for the next round.

- powder diffractometers: D1B*, D2B, D20, SALSA
- liquids diffractometer: D4
- polarised neutron diffractometers: D3, D23*
- single-crystal diffractometers: D9, D10
- large scale structure diffractometers: D19, LADI
- small-angle scattering: D11, D22, D33
- reflectometers: SuperADAM*, D17, FIGARO
- small momentum-transfer diffractometer: D16
- diffuse-scattering spectrometer: D7
- three-axis spectrometers: IN1-LAGRANGE, IN8, IN12*, IN20, IN22*, ThALES
- time-of-flight spectrometers: IN4, IN5, IN6, BRISP*
- backscattering and spin-echo spectrometers: IN11, IN13*, IN15, IN16B
- nuclear-physics instruments: PN1, PN3-GAMS
- fundamental-physics instruments: PF1B, PF2, S18*

* Instruments marked with an asterisk are CRG instruments, where a smaller amount of beamtime is available than on ILL-funded instruments, but we encourage applications for these.

The list of **operating CRGs** is as follows (status June 2015):

CRG-A: D1B, IN13
 CRG-B: BRISP, D23, SuperADAM, IN12, IN22, S18
 CRG-C: CRYO-EDM (no public beamtime available)
 GRANIT jointly funded with LPSC (UJF, CNRS)
 You will find details of the instruments on our website at <http://www.ill.eu/instruments-support/instruments-groups/>

Scheduling period

The proposals accepted at the next round will be scheduled in the 3 reactor cycles in 2016.

Reactor cycles in 2016

The dates for future reactor operation will be communicated at <http://www.ill.eu/reactor-environment-safety/high-flux-reactor/cycles/>

College Secretaries

College 1 - Applied metallurgy, instrumentation and techniques: *Anne Stunault*
 College 2 - Theory: *Marie-Bernadette Lepetit*
 College 3 - Nuclear and particle physics: *Andrew Pollitt*
 College 4 - Magnetic excitations: *Jacques Ollivier*
 College 5A - Crystallography: *Estelle Mossou*
 College 5B - Magnetism: *Navid Qureshi, Charles Dewhurst (vice secretary)*
 College 6 - Structure and dynamics of liquids and glasses: *Gabriel Cuello*
 College 7 - Spectroscopy in solid state physics and chemistry: *Andrea Piovano*
 College 8 - Structure and dynamics of biological systems: *Bruno Demé*
 College 9 - Structure and dynamics of soft-condensed matter: *Orsolya Czakkel, Yuri Gerelli (vice secretary)*

Calendar

Workshops in 2015

- International Student Summer Programme on X-Ray and Neutron Science (EPN Campus, 6 September - 3 October) - <http://www.ill.eu/en/press-and-news/events/x-ray-and-neutron-science-international-student-summer-programme-at-illesrf/>
- NDS 2015, 4th International Workshop on Neutron Delivery Systems (ILL, 28 - 30 September)
<http://www.ill.eu/en/press-and-news/events/nds-2015/>
- LiQ2015 - International Workshop on Liquid-Liquid Interfaces (ILL, 21 - 23 October)
<http://www.ill.eu/en/press-and-news/events/liq-2015/>



Order your copy of the ILL Annual Report (communication@ill.fr) or consult the on-line version at <http://www.ill.eu/quick-links/publications/annual-report/>

The deadline for submitting an article to the next Annual Report is 1 October 2015.

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