

## CONTENTS

- 2 FACILITY NEWS
- 4 INSTRUMENT & TECHNICAL UPGRADES
  - A newly designed, magnetically driven 1-2 (flowgradient) plane shear cell available at the ILL
  - RAINBOWS reflectometry technique is successfully tested
- 8 EVENT & MEETING REPORTS
- 11 ANNOUNCEMENTS
- 12 PROPOSAL ROUND
- 14 CALENDAR

## In brief

- **Prof. Mark Johnson** has been appointed as the new UK Associate Director of the ILL, with effect from 1 October 2016. He will act as Head of the Science Division. Mark became Head of the Computing for Science group in the Science Division in 1999. Since 2012, he has also led the European NMI3-II project which included the consortium's successful bid for further funding with the SINE2020 project in the Horizon 2020 Framework Programme ([More here](#)).
- **The green light for Endurance:** At its recent meeting, the ILL Steering Committee approved Phase One of the Endurance upgrade programme with total funding of 22 038 k€ (13 500 k€ from the Associates and 8 538 k€ from the normal operating budget). ILL will therefore now launch instrument projects for the three-year period 2016-2018, such as D10+, Fipps, IN13+, Panther, Rainbows, SuperSUN, XtremeD as well as the H24 guide project. This phase will also include the infrastructure projects BASTILLE and NESSE.
- **Fuel elements:** The contract with France's AREVA-CERCA for the manufacture and delivery of four fuel elements plus the main mechanical parts of four others has been signed. This will provide ILL with six fuel elements and guarantees reactor fuelling until 2017. Discussions are now being held with AREVA-CERCA to secure our fuel supply for the years beyond 2017.

# Facility news

## LARGE SCALE EUROPEAN PROJECTS AT ILL

### NMI3-II - A second ILL coordinated project reaches a successful conclusion

M. Förster and M. Johnson (ILL)

European-funded projects have facilitated a high level of integration between facilities and the user community. While these projects have funded European, neutron and muon sources and associated academic partners, they have benefitted the user community directly through *trans-national access (TNA)* funding and, indirectly, through *networking* and *joint research activities* which are described below.

The ILL has coordinated two projects under the 7<sup>th</sup> Framework Programme of the European Commission; both were called Neutron and Muon Infrastructure Integrating Initiatives - NMI3. The first project started in 2009, coordinated by Helmut Schober, at the time Group leader of TOF/HR. Helmut was designated to prepare the proposal after the very first NMI3 project, led by Robert McGreevy (ISIS) under the previous framework programme, came to an end. The second project, NMI3-II, started with a one year overlap in 2012 and is currently coordinated by Mark Johnson, head of the Computing for Science group. Miriam Förster is an experienced EU project manager who has been employed at ILL since 2009 to run these projects and stimulate wider ILL involvement in EU projects. In particular, Miriam has organised two industry related activities in NMI3-II, focussing on industry as a supplier and industry as a user. For the latter, through a close collaboration with the CALIPSO light sources project and, in particular, the ESRF, a common Industry Advisory Board was established.

*Transnational access (TNA)* sponsors beamtime and travel costs for scientists accessing a facility outside their home country which is the basis of an open-access model to facilities for all European

scientists and is of particular benefit to countries without neutron sources. To date, ILL has not benefitted from TNA since most European neutron scatterers have access directly via membership agreements with ILL. In the future, TNA could be used to seed new members at ILL.

The *networking activities* of the NMI3 projects have systematically pursued dissemination, outreach and training, as well as initiatives to harmonise the access to and use of facilities. A dedicated information manager, Ines Crespo, based at FRMII in Munich, is continuously publishing news on the project web-site and social media, as well as a project independent web site ([neutronsources.org](http://neutronsources.org)). This dissemination activity benefits from a newly created network of press officers. As well as the traditional schools for training neutron scatterers, NMI3 has developed, with colleagues in Copenhagen, an e-learning platform called 'Virtual Neutrons for Teaching' (VNT). Neutron scattering is not widely taught in universities and the VNT will significantly facilitate the access to state-of-the-art teaching material for lecturers and students. User offices of the different facilities have also worked together in the project to explore ways of harmonising proposal forms, user identification and the peer



Mark Johnson, coordinator of the NMI3-II project at the ILL, and Miriam Förster, ILL EU project manager.

review process. Computing for Science groups have worked together to review the current status of data treatment software and define a strategy for future, collaborative provision software.

*Joint research activities (JRAs)* play a crucial role in efficiently developing technology across all facilities – development costs are shared and common technology is deployed. In NMI3, muon spectroscopy and detectors are recurring themes for JRAs - the latter, for example, has addressed

the <sup>3</sup>He crisis with the development of <sup>10</sup>B detectors. Otherwise the JRAs are closely aligned with activities and developments in the facilities, such as neutron optics, sample environment, bio-mass deuteration and soft matter and biology research at ILL.

All of these efforts have provided the basis for a new proposal for a project which just started in October this year: SINE2020. ■

### SINE2020 – Science and Innovation With Neutrons in Europe in 2020

M. Förster and M. Johnson (ILL)

SINE2020 is a 12 M€ infrastructure development project in the Horizon2020 Framework Programme that federates 18 facilities and academic partners. Through *networking* and *joint-research activities (JRAs)*, it takes forward some of the key components of previous projects to prepare the European community for first neutrons at ESS in 2020 and to explore the innovation potential of neutrons – the two major goals of SINE2020.

Despite the fact that TNA could not be funded in SINE2020, the project is largely user-oriented through training activities and JRAs which focus on the user interface: sample, sample environment and software. SINE2020 will continue to support neutron schools and the e-learning initiative, increasing its scope to cover a wider range of learning levels and applications. The sample JRA focusses on chemical deuteration, completing the European offer for deuterated materials, and the systematic, reproducible growth of crystals of biological samples, like proteins. The sample environment JRA will develop new equipment for sample changers, pressure cells and complementary *in-situ* measurements, as well as establishing communication protocols that will allow equipment to be shared on the widest possible basis. The software JRA takes forward the work from NMI3. Mantid will be widely deployed across European facilities for data reduction and a collective approach will be fostered for data

treatment for SANS, reflectometry, imaging, INS, QENS and atomistic simulations. One more JRA will continue the development of detectors, focussing mainly on the high count rates expected at ESS, and of integrated simulations for sources, instruments and shielding. The initial industry activity in NMI3-II is pursued in SINE2020 with a 1.7 M€ networking activity dedicated to outreach to industry and performing feasibility experiments for industry.

The future is bright for neutrons in Europe with ESS and SINE2020. And yet there is an emerging threat. Aging infrastructure, combined with funding pressure, will result by 2020 in the closure of two major national facilities in Europe. At a time when capacity needs to be maintained in order to draw full cost and scientific benefit from ESS, the European community is faced with a 25 % reduction in capacity long before ESS will reach its full operational level. Capacity in Europe needs to be optimised, which includes raising new funds for TNA. A new NMI3 proposal is therefore being prepared, led by Thomas Gutberlet (Jülich). This proposal will also address new, affordable, accelerator-based, national sources that will, in the future, underpin the world's most powerful spallation source, ESS, and the world-leading, European neutron community.

\*See <http://nmi3.eu> and <http://sine2020.eu>

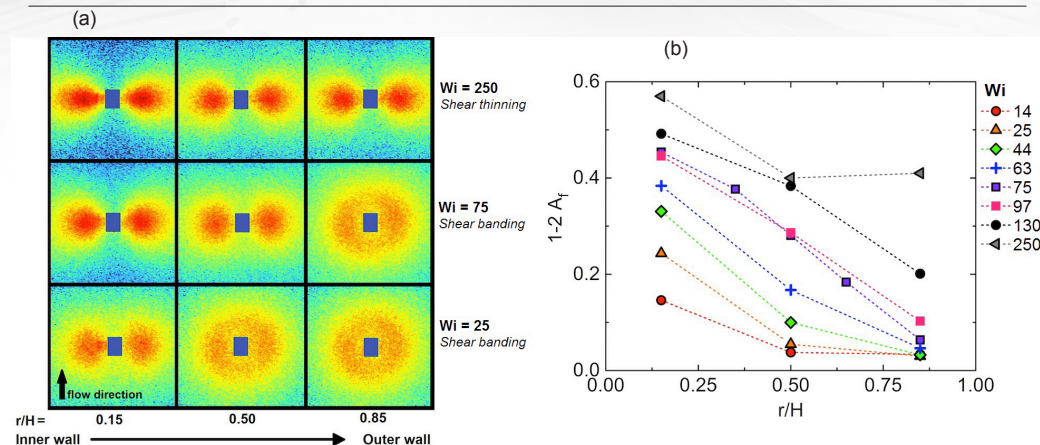
## Effect of branching on shear banding in worm-like micelles (WLMs) under large amplitude oscillatory shear (LAOS)

M.A. Calabrese and N.J. Wagner (University of Delaware, Newark, USA), S.A. Rogers (University of Illinois, Urbana, USA), L. Porcar (ILL)

Structured surfactant solutions such as worm-like or polymer-like micelles (WLMs/PLMs) are commonly used in applications ranging from consumer products to oil and energy recovery fluids [1,2]. Linear WLMs tend to exhibit shear banding flow instabilities under steady shear deformation, phenomena where the flow organises into macroscopic bands with high shear rate (low viscosity) and low shear rate (high viscosity). These instabilities may compromise the quality of the applications; however, branching in WLMs can minimise or eliminate shear banding instability [1]. Research has primarily focused on steady-state shear banding; however, WLMs may also shear band under dynamic deformations that are more likely to be seen in industrial applications. Shear banding under large amplitude oscillatory shear (LAOS) deformation has been widely predicted [3], but experimental corroboration has been limited.

A newly designed, magnetically driven 1-2 (flow-gradient) plane shear cell developed in the ILL Large-Scale Structures group in collaboration with the NIST Center for Neutron Research has enabled microstructure measurements of a wide array of complex fluids under time- and spatially-dependent flows [4]. Spatially-resolved measurements are a capability unique to the 1-2 shear cell, now available to all ILL users, as rheo-SANS or other current flow cell configurations do not provide spatial information. By taking measurements at multiple positions across

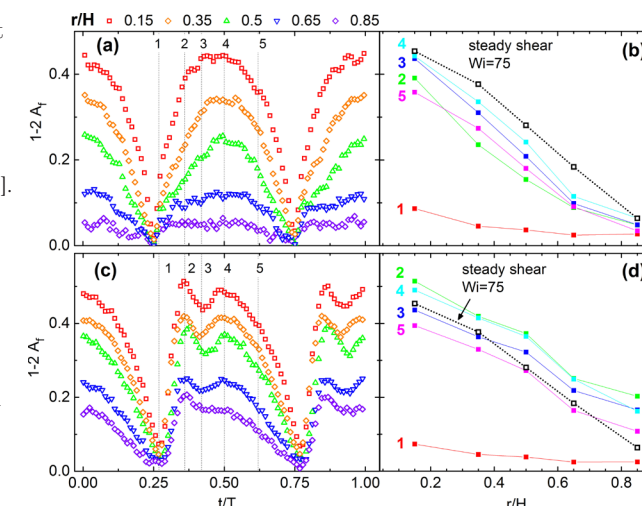
the gradient of the flow in the 1-2 shear cell, spatially heterogeneous flow profiles such as shear banding under LAOS can be identified [5]. Further advances in SANS data collection at the ILL have increased the temporal resolution of SANS responses by orders of magnitude, enabling continuous dynamic responses to be measured. The WLM solutions investigated consist of 1.5 % wt mixed cationic/anionic surfactants (97:3 wt ratio of CTAT/SDBS) prepared in D<sub>2</sub>O. Sodium tosylate is added to induce branching, where 0.01, 0.05 and 0.10 % wt NaTos correspond to low, mild, and high degrees of branching, respectively. The degree of branching is determined via SANS, cryo-TEM and rheo-optical methods [1,2]. Steady shear and LAOS conditions are reported using the dimensionless frequency and shear rate, or Deborah (De) and Weissenberg (Wi) number. In the mildly branched solution, steady shear banding is observed between  $1 < Wi < 100$ . Steady shear SANS results can be observed in figure 1a, where significant decreases in the scattering anisotropy from the inner ( $r/H=0.15$ ) to outer wall ( $r/H=0.85$ ) indicate shear banding ( $Wi=25, 75$ ). This scattering anisotropy is used to calculate a segmental alignment factor at each gap position (figure 1b). The sharp decreases in  $A_{1-2}$  with increasing  $r/H$  are similar to the discontinuous velocity profiles measured in shear banding fluids. When  $A_{1-2} > 0.2$  at all gap positions, the material no longer shear bands ( $Wi > 100$ ).



**Figure 1:** 1-2 plane scattering patterns and alignment factor as a function of gap position,  $r/H$ , and  $Wi$ . At  $Wi=25$  and  $75$ , the system shear bands, whereas only shear thinning is observed at  $Wi = 250$ . Significant decreases in  $A_{1-2}$  from the inner ( $r/H=0.15$ ) to outer ( $r/H=0.85$ ) wall are indicative of shear banding.

Seven LAOS conditions were examined for this composition, and shear banding was observed in four of the conditions ( $De=0.17, Wi=75; De=0.33, Wi=75; De=0.58, Wi=75; De=0.5, Wi=64$ ). Shear banding was not observed in three conditions ( $De=0.5, Wi=113; De=0.67, Wi=85; De=0.75, Wi=96$ ) despite the fact that this sample exhibits shear banding under steady shear at  $Wi=85$  and  $96$ . The results are in excellent agreement with recent VCM model predictions of LAOS shear banding [3]. Two distinct forms of dynamic shear banding were identified. In figures 2a and b, the alignment factor is shown at multiple gap positions,  $r/H$ , and times throughout the oscillation,  $t/T$ , for  $De=0.17, Wi=75$ . The maximum alignment during the LAOS cycle and the alignment profiles are similar to that of the steady shear case (figure 2b). The shear-banded structure is persistent through much of the oscillation cycle. As the oscillation period is long, the material can relax during the cycle, leading to alignment

similar to that of steady shear. A different form of shear banding is seen for  $De=0.58, Wi=75$  (figure 2c-d), where the material is trapped in a metastable shear-banded state. The material exhibits 'hyper-alignment,' a phenomenon where

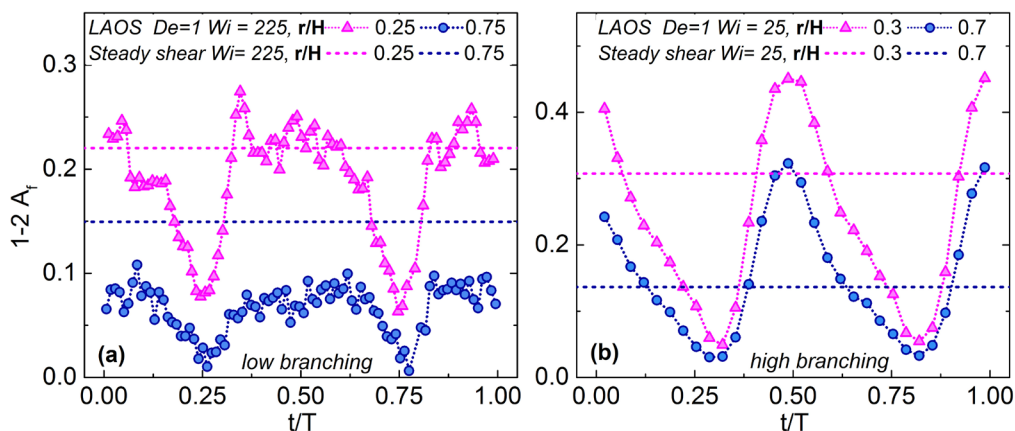


**Figure 2:** 1-2 alignment factor as a function of gap position,  $r/H$ , and time during oscillation,  $t/T$  for  $De=0.17, Wi=75$  (a-b) and  $De=0.58, Wi=75$  (c-d). When  $De=0.17$ , the material has time to relax during the oscillation cycle, leading to a shear banding that is similar to that of steady shear. When  $De=0.58$ , the material is trapped in a metastable, hyper-aligned state that distinctly differs from the steady shear case.

the maximum alignment under LAOS is larger than that of steady shear. The hyper-alignment observed during this faster oscillation period is a consequence of incomplete material relaxation during the cycle. The alignment factor profiles shown in figure 2d are of greater magnitude than those observed under steady shear, but still show a distinct banded structure. Hyper-alignment was also observed in the non-shear banding conditions at higher Deborah numbers, indicating that shear banding is not a requirement for hyper-alignment.

Shear banding under LAOS was also identified in the low branching solution at  $De=1$ ,  $Wi=225$  (figure 3a) and  $De=1$ ,  $Wi=321$ , where steady shear banding is observed between  $1 < Wi < 600$ . In both cases, little hyper-alignment was observed at  $r/H=0.25$ , and no hyper-alignment was observed

at  $r/H=0.75$ . Conversely, no shear banding was observed in the highly branched solution under steady shear or LAOS at  $De=1$ ,  $Wi=25$  (figure 3b). Despite the order of magnitude lower Weissenberg number, significant hyper-alignment was observed. No alignment is observed in the low branched solution at  $Wi=25$ . The results suggest that shear banding under steady shear is necessary, but not sufficient to observe shear banding at comparable Weissenberg numbers under LAOS. Further, branching appears to inhibit steady and dynamic shear banding, while magnifying hyper-alignment. These results can aid in the formulation of WLMs/PLMs for specific applications where both steady and dynamic flows are relevant, as well as provide data necessary for critically testing modern, microstructure-based constitutive equations. ■



**Figure 3:**  $1-2 A_t$  as a function  $r/H$  and  $t/T$  for the (a) low branching solution,  $De=1$ ,  $Wi=225$  and (b) high branching solution,  $De=1$ ,  $Wi=25$ . Steady shear  $A_t$  is shown with dotted lines. Little hyper-alignment is seen in the low branching solution, whereas hyper-alignment is significant in the high branching solution.

**References:**

[1] M.A. Calabrese, S.A. Rogers, R.P. Murphy and N.J. Wagner, *Journal of Rheology* 59(5) 2015  
 [2] B.A. Schubert, E.W. Kaler and N.J. Wagner, *Langmuir* 19(10) 2003  
 [3] L. Zhou, L.P. Cook, and G.H. McKinley, *Journal of Non-Newtonian Fluid Mechanics* 165(21) 2010  
 [4] A.K. Gurmon, et al, *Journal of Visualized Experiments* 2014  
 [5] M.A. Calabrese, S.A. Rogers, L. Porcar and N.J. Wagner, submitted to *Journal of Rheology* 2015

**The new RAINBOWS reflectometry technique is successfully tested**

*R. Cubitt, J. Segura and B. Giroud (ILL)*

Up to now we have only three techniques available to us to measure the wavelength of the neutrons we use in our experiments: Choppers, monochromators and selectors.

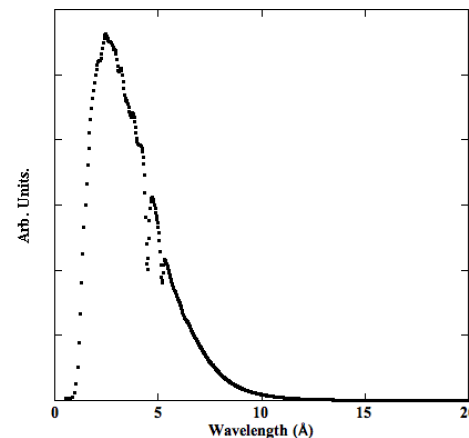
They have two things in common, they are very expensive and extremely wasteful in the sense they cannot use all of the available neutron beam. For example the choppers on D17 have such a tiny opening that the beam can be said to be truly open for only about 8 minutes a day.

The idea of using a prism to measure the wavelength is no different from how different colours of light are deflected different amounts by a prism.

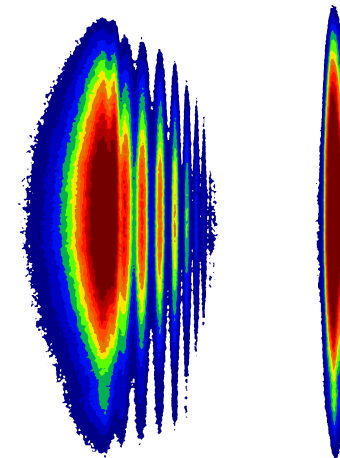
The great advantage of this technique is not only its simplicity and its low price but the fact that most of the available neutrons are used, with only those absorbed, reflected and scattered by the prism lost. Figure 1 shows the measured cold source spectrum on D50 measured by a specially shaped MgF2 prism. The two dips correspond precisely to the wavelengths removed from the

beam by the upstream instruments D16 and Super ADAM and the ripples to the left of them are the neutrons scattered out by aluminium in the beam such as the safely membranes. The fact that these features are readily resolved shows the wavelength resolution will be adequate for experiments. Figure 2 shows the results of a reflection from a 100 nm thick Ni layer on glass which subsequently passes through the prism. The peak to the right are neutrons that reflected from the prism surface and the remaining signal are the varying reflectivity of the sample as a function of increasing wavelengths towards the left. Data analysis is ongoing but we are confident the technique works and will be useful not only for conventional reflectivity on D50 but the very fast kinetics on D17 and FIGARO as part of the endurance program will open up many new scientific possibilities.

We would like to thank everyone who contributed to developing this new technique. ■



**Figure 1:** The incoming neutron spectrum.



**Figure 2:** Raw data image of a sample reflection through the prism.

# Event & meeting reports

## International Student Summer Programme 2015

EPN campus, 6 September - 3 October  
<http://www.ill.eu/de/press-and-news/past-events/2015/x-ray-and-neutron-science-international-student-summer-programme-at-illesrf/>

*P. Steffens*

For the second year running, the ILL and ESRF organised a joint International Student Summer Programme for undergraduates from all over Europe. The fifteen students who participated over the four weeks discovered the world of neutron- and X-ray science. For these undergraduates, the discovery of these techniques and life in a large-scale international scientific facility was a major career experience. Scientists from the ILL and ESRF gave courses on the basics of neutron and X-ray science and its application in various fields.

*"Being in contact with international research groups and students from all around Europe, and being able to visit and use state-of-the-art experimental facilities has been life changing for me",* says Vittorio, from the University of Milan in Italy.

The course brought together undergraduate students from Germany, the UK, Italy, Spain, Portugal, Denmark, Slovakia, Russia and Poland. The fifteen students were selected from the 120 applications received earlier in the year.

The organisers of the course, Paul Steffens (ILL) and Patrick Bruno (ESRF), were *"very impressed by the high quality and high*

*motivation of the students and the excellent supervision they received from their tutors."* This became evident in the final seminar, in which all the participants made 20-minute presentations of their work at the ILL or ESRF.

Each student worked on a specific experimental project, immersed in one of the institutes' research groups. The ILL PhD students played a particularly important role in helping and supervising the students. By working with the undergraduates they provided the best possible example of what these young students might themselves be doing in the future, whether as thesis students or users. ■



## 4<sup>th</sup> International Workshop on Neutron Delivery Systems 2015

ILL, 28 - 30 September

<http://www.ill.eu/de/press-and-news/past-events/2015/nds-2015/>

*J. Beaucour, R. Boffy, V. Duchastelier, M. Kreuz, A. Lechat and A. Ratel (ILL)*

The ILL again and for the 4<sup>th</sup> time hosted the Neutron Delivery System International Workshop this year. More than 100 scientists and engineers met to discuss how neutron delivery systems could be further improved. The workshop provided an ideal opportunity for industry to catch up on the science being conducted, and for the user community to meet companies working in their field.

The talks covered most of the scientific and technical fields concerned by neutron transport systems. Subjects included the ageing of borosilicate mirror substrates and the estimation of their life expectancy in neutron guides; these have always been fundamental and historically important topics in this series of workshops. Speakers also presented the improvements being made to neutron delivery systems and optics in a number of neutron facilities (ANSTO, HANARO, HZB, ILL, ISIS, J-PARC, OPAL, PSI etc.) as well as innovative guide and shielding systems, especially within the ESS programme.

Recent advances in ultra-cold neutron production and transport were also on the agenda. The detailed programme and the pdf version of the presentations can be found on the event website.

The success of NDS workshops relies on the combination of high-quality scientific and technical talks, on the one hand, and the strong commitment of industrial partners on the other. Indeed, the event gave all participants the opportunity of meeting companies working in their domain of interest. Thanks to the compact size of the industrial exhibition and the relaxed atmosphere, scientists and engineers could discuss the technical challenges they were facing and how industry could help to

solve them. Their expertise spanned neutron guide manufacturing, cryogenics, high-precision mechanics and radiation shielding equipment.



Fruitful discussions between scientists, engineers and company representatives during the industrial exhibition.

The organisers gratefully acknowledge the support provided by all the industrial partners. Thanks to their sponsorship this workshop was, once again, free of registration fees.

At the end of the conference, the participants were provided with a visit of the ILL facilities through the reactor building and the guide halls. Because the reactor was shut down, visitors could visit usually restricted areas, such as the inside of the guide casemates, a few metres from the reactor vessel. These are at the heart of the neutron guide infrastructure. It was, in addition, a good opportunity to discover the newly refurbished H5 guide system.

The community is now looking forward to the next edition in July 2018. It should see the development of innovative neutron mirror substrates and guide geometries. ■

## International Workshop on Liquid-Liquid Interfaces

ILL, 21 - 23 October

<http://www.ill.eu/de/press-and-news/past-events/2015/liq-2015/>

Y. Gerelli (ILL) on behalf of the organisers



The aim of this workshop was to identify priority areas for the future development of scattering techniques in the study of liquid-liquid (LL) interfaces. The meeting brought together scientists interested in the structures and processes at the boundary between two immiscible liquids. In total, more than 40 scientists, mainly from Europe, but also from North America and Japan, attended the workshop, with 25 invited and contributed talks.

The ILL was a late-comer to the wave of developments at liquid surfaces, as FIGARO, its vertical scattering reflectometer, was only fully commissioned in 2009. With its unique option to strike the interface with neutrons from both sides in high-flux kinetic mode, FIGARO is now truly delivering in these innovative and challenging studies.

The meeting was opened by the ILL Science Division Director Helmut Schober. This was followed by an overview of current capabilities at X-ray and neutron scattering facilities for the study of LL interfaces by Tom Arnold and Richard Campbell. The first invited speaker, Ali Zarbakhsh, presented a review of his work on soft matter systems at oil-water interfaces. Valentin Gordelyi then presented the needs

of the biology community in the study of cell membranes. Jian Lu concluded the first series of talks describing work on protein adsorption at oil-water interfaces. On the second day, Robert Dryfe gave examples of the application of spectroscopic techniques in the study of metal deposition at LL interfaces. Pierre-François Brevet highlighted the role of optical second harmonic generation in the investigation of ion- and electron- transfer processes. Mark Schlossman then illustrated the power of fluorescence and X-ray reflectometry techniques for the study of transfer processes at LL interfaces. The talks were concluded by Brigitta Zielbauer who discussed rupture at the air/water interface of oil droplets found in soy beans, and Isabelle Grillo who elaborated the important link to LL interfaces of neutron scattering studies in bulk solution.

A lively Round Table then took place, animated by Giovanna Fragneto and Richard Campbell, Oleg Konovalov and John Webster. The discussion concentrated on the identification of new scientific *areas* that could benefit from the use of neutron and X-ray reflectometry and on the needs of the current user community.

On Friday morning the talks were opened by Peter Fischer who described the interfacial properties of food-related systems from protein adsorption to emulsion stability. The workshop was closed by a talk given by Luca Costa who premiered his results on AFM studies of nanoparticles at LL interfaces.

Overall the workshop was very successful and provided a valuable forum of exchange both for 'old friends' and newcomers in the field. For the ILL staff, the workshop provided the opportunity to present current capabilities to the user community and to obtain useful feedback for future directions. ■

# Announcements for ILL users

## ILL publication and data policy

All users participating in experiments are obliged to comply with the ILL publication and data policy. You are asked to commit to this when submitting a proposal.

You should agree with your Local Contact on the terms of his/her involvement in the performance of your experiments and in the data analysis before coming to the ILL, as specified in the invitation form.

If the results of your experiment are going to be published, you must give proper credit to ILL staff members who participated in the experiment and a proper mention of ILL facilities (preferably on the first page).

The ILL considers it natural that Local Contacts who have made a significant contribution to the concept, design, execution, analysis or interpretation of user experiments should be offered the opportunity to be listed as authors in publications.

In any case you should at least acknowledge ILL scientists with their ILL affiliation at the end of your paper.

Be aware that the ILL Data Policy (<http://www.ill.eu/de/users/ill-data-policy/>) provides for data from ILL experiments to be made public via the ILL Data Portal ([data.ill.eu](http://data.ill.eu)) after an embargo period.

When you publish results of ILL data - either your own data, data to which you were granted access, or data that were made public - you must cite the DOI reference using the specified format shown in the box.

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

**Please use the following ILL address as the standard for author lists in publications:**

Institut Laue-Langevin, 71 avenue des Martyrs,  
CS 20156, 38042 Grenoble cedex 9, France

**Please use the following DOI 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

## Proposal round

The next deadline for proposal submission is **Tuesday, 9 February 2016, midnight (EU time)**. The web system will **open on 1 January 2016**. Proposals will be reviewed over March/April and the Subcommittee Meetings will meet to assess them on **12-13 April 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 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 Visitors Club team. Please allow sufficient time for any unforeseen computing hitches. If you have encountered any difficulty at all, please contact our web-support ([club@ill.eu](mailto:club@ill.eu)). For other queries, contact the User Office ([sco@ill.eu](mailto:sco@ill.eu)). ■

### Policy for beamtime allocation

Proposals with non-member country proposers are only guaranteed a chance of acceptance if they are part of a collaboration and at least two thirds of the proposers are from a member country (or from the ILL).

We encourage all users to check and update their affiliation when submitting their proposal. When calculating the allocation of beamtime per country, the attribution is based on the location of the laboratory of the proposers, not their individual nationality.

### Scheduling period and Reactor power in 2016

Proposals accepted at the next round, will be scheduled over the three cycles in 2016, one of which of reduced power (44,5 MW).

Please indicate in your proposal if you absolutely need the highest nominal power (53.5 MW) to successfully perform your experiment. ■

### Instruments available

The following instruments will be available for the forthcoming 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, for which 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 December 2015):

CRG-A: D1B, IN13

CRG-B: BRISP, D23, SuperADAM, IN12, IN22, S18

CRG-C (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/>

### College Secretaries

College 1 - Applied metallurgy, instrumentation and techniques: *Anne Stunault*

College 2 - Theory: *Marie-Bernadette Lepetit*

College 3 - Nuclear and particle physics: *Michael Jentschel*

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 Czakké, Yuri Gerelli (vice secretary)*

## Calendar

### Important dates

Proposal deadline: **9 February 2016**  
 Subcommittee meetings: **12-13 April 2016\***  
 Scientific Council: **14-15 April 2016**  
 Scheduling period: **3 cycles in 2016**

*\* Please note that the subcommittee 3 will meet on a different date, on the 6-7 April 2016.*

### Reactor cycles in 2016

Cycle n° 178	from to	17/05/2016 16/07/2016	44.5 MW 60 days
Cycle n° 179	from to	23/08/2016 12/10/2016	53.5 MW 50 days
Cycle n° 180	from to	02/11/2016 22/12/2016	53.5 MW 50 days

The provisional dates for future reactor cycles can be found at

<http://www.ill.eu/reactor-environment-safety/high-flux-reactor/cycles/projected-operation/>

### Frothcoming workshops in 2016

- Neutron Spectroscopy in Condensed Matter Physics (ILL, 30 - 31 March)  
<http://www.ill.eu/lpRegnault2016>
- Journées de la Diffusion Neutronique 24" (Carqueiranne, 2 - 4 May)  
<http://www.sfn.asso.fr/accueil/>
- 13<sup>th</sup> European Summer School on "Scattering Methods Applied to Soft Condensed Matter" (Bombannes, 20 - 27 June 2016)  
<http://www.ill.eu/bombannes>
- The 4<sup>th</sup> International Soft Matter Conference - ISMC2016 (Grenoble, 12 - 16 September 2016)  
<http://www.ismc2016.org>



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