THE EUROPEAN NEUTRON SOURCE

ILLnewsletter

November 2021

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GENERAL NEWS

New faces at the head of the ILL!

On 1st October, Paul Langan became the new Director of ILL. He joins the ILL from Oak Ridge National Laboratory, where his first assignments were as Director of the Center for Structural Molecular Biology and Director of the Biology and Soft Matter Division. He was then given responsibility for the operation and development of the Spallation Neutron Source (SNS) and the High Flux Isotope Reactor (HFIR). Andreas Meyer is the new German Associate Director and the new Head of the Projects and techniques Division - DPT. He comes from the German Aerospace Center, the DLR, in Cologne, where he was Head of the Institute of Materials Physics in Space. As for Jacques Jestin, he has just taken over as Head of the Science Division, after 18 months as Head of the DPT. The three of them will both hold office until 30 September 2026.

The ILL20-23 Programme and 2021-2022 long shutdown

The ILL20-23 programme is a major programme of maintenance and upgrade work for Reactor Division, Endurance and other projects, which entails several longer shutdowns. The renewal of the H1-H2 beam tube and the delivery of a number of major Endurance guide and instrument projects are the objective for the forthcoming, longest shutdown spanning most of 2022. The programme has successfully started on October 13 with the dismantling of the H24 instruments.
A very short cycle is currently planned at the end of next year, and the ILL user programme will be again in full swing in 2023 with three cycles scheduled before the summer break. .
Read more

News from the Scientific Council

The105th meeting of the Scientific Council - chaired by Arnaud Desmet (CNRS, Bordeaux) - was held on 4 November. In his overview of recent progress Paul Langan communicated to the Council that completion of the third reactor cycle on 13 October brings to an end an outstanding year of operations and scientific productivity. Jaques Jestin and Andreas Meyer outlined how the end of the cycle also heralds the beginning of the carefully planned ILL20-23 long shutdown and the final stages of a two-decade long campaign of improvements to the reactor and instruments. Completing the campaign within the next three years, will depend on excellence in project management, careful fiscal management, the full engagement of ILL personnel, and the continued support of the Scientific Members. The reward will be new world-leading scientific capabilities for European researchers at a safe, reliable, and sustainable high flux reactor. Council members Martin Weik (IBS, Grenoble) and Paolo Radaelli (University of Oxford, UK) reported on recent reviews of LADI and D4 instruments. In initial feedback to ILL management at the end of the meeting, the Council strongly emphasized the importance of completing the ILL20-23 programme on time, and delivering all Endurance programme instrument improvements. At future Council meetings, the discussion will turn towards strategic science planning and how to delivering the best science possible with the unique experimental capabilities of the ILL.

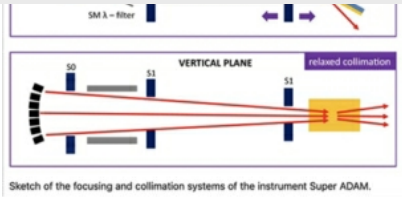
3rd ESS and ILL European Users Meeting - first announcement

In 2018 ILL and ESS hosted their first European Users Meeting in Grenoble. This successful meeting was followed in 2020 by a remote meeting hosted by the ILL and ESS. We now plan the 3rd instalment of this series as an in-person meeting to be held in Lund from **5 to 7 October 2022**. For the time being, please put these dates in your diary. More details on the meeting will be on the web site at http://www.neutrons4europe.com/.

HIGHLIGHTS AND SCIENCE NEWS

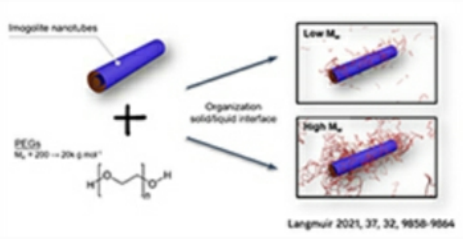
Enhanced neutron flux to probe lateral structures or Π-GISANS: Faster measurements of lateral structures

The understanding of interfacial properties of materials as well as interfacial processes in terms of structural, morphological and compositional changes is of crucial importance in many areas of science. Recently, surface science has advanced enormously and benefitted from the development of



Sketch of the focusing and collimation systems of the instrument Super ADAM.

a series of new, as well as already existing, experimental methods. We use a fan shaped incident beam focused along one dimension for grazing incidence neutron small-angle scattering. The enhanced flux allows reduced counting times in the minute range, rather than hours, which are required today. Our approach is transferrable to other instruments and will unlock new science by enabling systematic changes of sample parameters as contrast variation, temperatures or magnetic fields/hysteresis loops. Potentially this new method – π-GISANS - may even enable kinetic studies, which are not possible today, such as for example the understanding of the self assembled silica spheres on a silicaon surface.
Read more



Langmuir 2021, 37, 32, 9858-9864

Effect of polymer length on the adsorption onto clay nanotubes

An imogolite nanotube (INT) is an aluminosilicate clay mineral, naturally occurring and widespread in well-drained volcanic ash soils. INT offers similar characteristics to carbon nanotubes (CNTs) in terms of rigidity, sizes, and they are cheaper to produce. Consequently, INTs represent an interesting alternative of the CNTs in numerous applications including the fabrication of polymer/filler nanocomposites with multifunctional characteristics. Recently, a collaboration between French and Italian scientists investigated the adsorption mechanism of nonionic polymers onto geoinspired inorganic nanotubes in aqueous dispersions. The study proposed the first detailed description on the energetics involved in the formation of polymer/imogolite complexes by combining several techniques, including small-angle neutron scattering. The findings give a fresh look on the fundamental understanding of polymers with these modeled nanotubes and will also open new avenues for the rational design of these hybrid mixtures for advanced applications.
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Medical isotope collection at CERN MEDICIS; ©CERN 2018-2021

The ILL part of PRISMAP – the European medical radionuclides programme

Nuclear therapy and molecular imaging, can drastically improve outcomes for many medical conditions, making it possible to treat disseminated cancer in particular. However, the effective development of these techniques has long been limited by the difficulty of obtaining access to radionuclides, which are not yet commercially available. With PRISMAP – The European medical radionuclides programme, this is about to change. The ILL has recently expanded its activities by exploiting its research reactor for the production of emerging radionuclides. Together with its research partners in radiochemistry and nuclear medicine, the ILL has successfully pioneered the production of novel radionuclides, such as terbium-161. The PRISMAP project will make this combined expertise available for a wider user community.
Read more

MORE HIGHLIGHTS HERE !

A SELECTION OF RECENT ILL PUBLICATIONS

Previous issues of the ILL newsletter

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