ILLnewsletter

NEUTRONS FOR SOCIETY

ILL in focus

The latest standard call for proposals once again saw strong demand for beamtime at the ILL. A total of 575 experimental proposals were submitted, representing a 12% increase compared with the same period last year.
The proposals will be evaluated by the Subcommittees on 14–15 April, and those accepted will be scheduled over one and a half reactor cycles in 2026 (July–October).
As the first cycle of the year begins on 24 March, we look forward to welcoming researchers back to the ILL and to the discoveries their experiments will bring.

User Programme Calendar

14 – 15 April | Subcommittees Meeting (ILL)
16 – 17 April | Scientific Council Meeting (ILL)

15 September | Standard Proposals Deadline
DDT and EASY proposals: open year-round

3 – 4 November | Subcommittees Meeting (ILL)
5 – 6 November | Scientific Council Meeting (ILL)

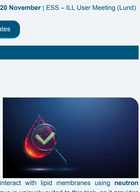
18 – 20 November | ESS – ILL User Meeting (Lund)

Check 2026 Reactor Cycle Dates

Recent science news

How neutron science helps make blood tests more reliable

Health



A biomarker is a biological molecule found in the body (for example, in the blood) that provides information about a normal biological process, the presence of a disease, or how a condition is evolving. Blood-based biomarkers are widely used to diagnose and monitor diseases through routine blood tests. However, in some cases they can be partially "hidden", becoming harder to detect accurately. This may happen when biomarkers interact with lipid (fat) assemblies circulating in the blood, especially when a patient has not fasted before a blood test.
Researchers investigated, with molecular precision, how biomarkers interact with lipid membranes using **neutron reflectometry on the FIGARO, D17 instruments at the ILL**. This technique is uniquely suited to this task, as it provides information on the structure of interfaces at the nanometre scale. By providing the first direct, nanometre-scale evidence of how disease-related protein modifications influence lipid interactions, these studies demonstrate the power of neutron techniques to tackle complex biomedical questions. The results pave the way for improved analytical strategies to detect cancer biomarkers and support the development of lipid-based biosensors, with potential impact on clinical diagnostics and disease monitoring. Read more

Cooling without gases: molecular design brings solid-state cooling closer to reality

Environment | Energy

Today's refrigerators and air conditioners rely on special gases that move heat by being compressed and expanded. These gases can have a very strong global warming effect if they leak, and with billions of cooling devices in use, even small losses matter. One promising alternative uses solid materials that heat up or cool down when pressure is applied. So far, this approach has been difficult to use in real devices, because the effect is hard to control and reproduce reliably.

In a recent study published in *Communications Materials*, the researchers explored one example of such a solid cooling material and made a small change to its composition, improving how consistently it behaves. Neutron experiments on **IN16B** then helped them observe how molecules move inside this material as it cools and heats, explaining why this change makes the cooling behavior more reliable. The result brings gas-free cooling a step closer to practical, climate-friendly applications. Read more

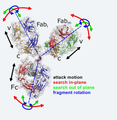
Small fibres, big effect: Neutrons take a glimpse inside the molecular structure of plant-based foods

Environment | Health

A study carried out at the ILL within the framework of the EU-funded InnovaXN project has shed light on the molecular structure of plant-based meat substitutes. By using the contrast variation technique on instruments D22 and D33, researchers demonstrated how the addition of pea fibre creates a fibrous texture closely resembling the texture of meat.
This research, published in the journal *Food Hydrocolloids*, shows how neutrons can help to optimise the textural qualities of tomorrow's food products, particularly in the context of developing sustainable nutrition. Read more

When antibodies attack: deciphering the molecular mysteries of the immune system

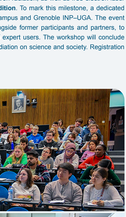
Health



A study published by researchers from the Jülich Centre for Neutron Science, in collaboration with ILL scientists, looks at the molecular motions of therapeutic antibodies. To ensure their efficiency, these treatments are often administered in the form of highly concentrated solutions, which considerably increases their viscosity and could slow down their effect. Using the spin-echo spectrometer **IN15**, researchers identified two key types of internal antibody movement: target 'search' and target 'attack'. Although the search motion slows down as viscosity increases, the attack motion persists, ensuring the effectiveness of the treatment. These results make it possible to optimise the design and formulation of future targeted, personalised treatments. Read more

Neutron technology

Paving the way for next-generation high magnetic field sample environments in neutron scattering

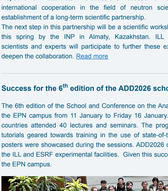


The fruitful partnership between the company HTS-110 and the ILL is set to continue with the design and manufacture of a 14 tesla high-field magnet for the European Spallation Source (ESS, in Lund, Sweden). This project builds on the success of the world's first high-critical-temperature superconducting magnet, which was delivered to the CEA and is already installed on the instrument D23 (an instrument jointly managed by ILL, CEA, and FZ Jülich). Combining magnetic power and thermal stability, the state-of-the-art high-field magnet is due to be delivered in 2027, opening up new possibilities for the study of quantum materials. Read more

European news

Towards wider use of neutron and photon research outputs

Completion of PRISMAP: the project radionuclide delivery map



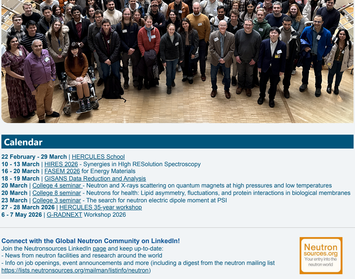
The first phase of the European medical isotope programme PRISMAP, dedicated to the development of high-purity radionuclides used in the fight against cancer, has come to an end. Over the past five years, PRISMAP has enabled 47 research projects to be carried out involving teams from 19 countries.
A follow-up project called PRISMAP+ has been submitted for funding in order to continue the work and further strengthen the network over the next three years, in line with the European Commission's commitment to combating the social impact of cancer.

Events

HERCULES - 35 Years of Excellence in Large-Scale Facility Training

Created in Grenoble more than three decades ago, the European doctoral school **HERCULES** has grown into a leading training programme in neutron and photon science. Over the years, it has equipped more than 2,500 scientists with the expertise needed to use Large-Scale Facilities delivering neutron and synchrotron radiation, as well as free-electron laser beams. From 22 February to 29 March 2026, HERCULES will run its **35th edition**. To mark this milestone, a dedicated **two-day anniversary workshop** will be held **on 27–28 March** at the EPN Campus and Grenoble INP-UGA. The event will bring together representatives of major infrastructures and networks alongside former participants and partners, to reflect on the rapid evolution of large-scale facilities and the future training of expert users. The workshop will conclude with two public lectures highlighting the impact of neutrons and synchrotron radiation on science and society. Registration for the 35th anniversary workshop is open to all:

Join the Workshop



A delegation from the Republic of Kazakhstan at the ILL

On 26 and 27 January, the ILL welcomed a delegation from the Atomic Energy Agency (AEA) and the Institute of Nuclear Physics (INP) of the Republic of Kazakhstan. Discussions focused on the future of international cooperation in the field of neutron science and the establishment of a long-term scientific partnership.
The next step in this partnership will be a scientific workshop organised this spring by the INP in Almaty, Kazakhstan. ILL management, scientists and experts will participate to further these exchanges and deepen the collaboration. Read more

Success for the 6th edition of the ADD2026 school and conference

The 6th edition of the School and Conference on the Analysis of Diffraction Data in real-space (ADD2026) took place on the EPN campus from 11 January to Friday 16 January. A total of 190 participants of 34 nationalities representing 25 countries attended 40 lectures and seminars. The programme included a full day dedicated to 10 parallel hands-on tutorials geared towards training in the use of state-of-the art data analysis and simulation software. Additionally, 75 posters were showcased during the sessions. ADD2026 concluded on a very positive note with with pedagogical tours of the ILL and ESRF experimental facilities. Given this success, the 7th edition is already being planned for January 2029 at the EPN campus.

Calendar

22 February - 29 March | HERCULES School
10 - 13 March | HiRES 2026 - Synergies in High RESolution Spectroscopy
16 - 20 March | FASEM 2026 for Energy Materials
18 - 19 March | GISANS Data Reduction and Analysis
20 March | College 4 seminar - Neutron and X-rays scattering on quantum magnets at high pressures and low temperatures
20 March | College 5 seminar - Neutrons for health: Lipid asymmetry, fluctuations, and protein interactions in biological membranes
23 March | College 3 seminar - The search for neutron electric dipole moment at PSI
27 - 28 March 2026 | HERCULES 35-year workshop
6 - 7 May 2026 | G-RADNEXT Workshop 2026

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