

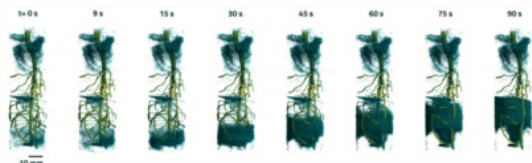


ILL newsletter

NOVEMBER 2019

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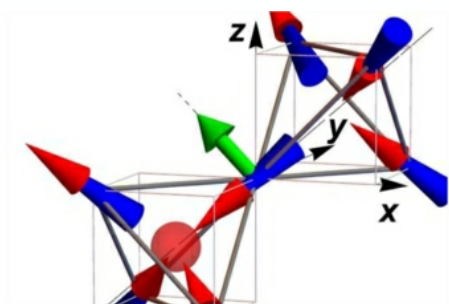
SPOTLIGHTS ON SCIENCE



Record-fast neutron tomography tracks water pathways into plants

NeXT-Grenoble has the most intense cold neutron flux for imaging purposes. For the first time, researchers have captured neutron tomography images in about a second, nearly an order of magnitude faster than previously reported attempts. The ability to acquire images so quickly allowed scientists from the University of Potsdam and the ILL to capture, with unprecedented detail, the fast processes involved when roots absorb water and other nutrients from the soil. A better understanding of these root-soil interactions could help optimise water-use efficiency and crop production, which could help meet higher demands from an increasing world population with limited resources.

[Read more](#)



New understanding of magnetic monopoles could signal new technologies

Researchers at Kent University applied a combination of quantum and classic physics to investigate how magnetic atoms interact with each other to form composite objects known as 'magnetic monopoles'. Basing the study on materials known as spin ices, the team showed how the 'hop' of a monopole from one site in the crystal lattice of spin ice to the next can be achieved by flipping the direction of a single magnetic atom. Although in theory at low temperatures the magnetic atoms do not have enough energy to do this, the team found that as a monopole arrives in a lattice site, it induces changes in the fields acting on the magnetic atoms surrounding it, which enable them to 'tunnel' through the energy barrier.

[Read more](#)



Neutrons shining light on the structure of silk-derived biomaterials

Silk may well be the oldest biomaterial humans have exploited. The primary protein comprising silk is fibroin and, in the last century, it has been intensely studied for a variety of advanced applications beyond luxurious fabrics. Some of the most exciting current research is exploring the potential of this protein in a range of applications using neutrons. Research is taking place at the ILL, where a number of instruments and techniques are ideally suited to the study of biological material and sensitive organic structures like proteins.

[Read more](#)

[MORE HIGHLIGHTS HERE !](#)

NEWS FOR USERS

Beamtime access

Easy Access requests for short measurements and **DDT requests** for full experiments to be performed as soon as possible can be submitted at any time. The deadline for normal proposals is 17 February 2020.

The new spin-echo spectrometer **WASP** (available to users from January 2020) will offer a very large gain in intensity on the sample. It will therefore be possible to perform much shorter experiments than before (2-3 days), including measurements via the Easy Access route.

The next **reactor cycle** is scheduled to run from 9 January to 26 February 2020. We will then deliver the second cycle, followed by a shutdown over the summer and, a third cycle is planned for the end of 2020.

Web pages for new ILL users

There are now new pages on our website dedicated to [new neutron- and/or ILL users](#). These will help the non-specialist user understand which neutron technique and instrument is best suited for their research. These pages will also help regular ILL users to compare the characteristics of the many instruments used for the same [experimental techniques](#). Note, in addition, that there are new [industry web pages](#) with illustrative case studies.



Green light for the first InnovaXN projects

The ILL and ESRF have obtained a EU grant to support a PhD programme called "InnovaXN". The programme will support 40 fully-funded PhD projects (**which must involve an industrial partner**), with two recruitment waves, each with 20 students (hired either by ESRF or ILL) in September 2020 and September 2021. The InnovaXN committee has recently selected 20 projects from 60 expressions of interest from European industry and their academic partners. The approved projects cover a wide range of research fields such as chemistry, catalysis, aerospace, automotive and consumer products. The projects will be advertised for prospective students in early 2020.

[Read more](#)



Free "gold open access" publications

As part of the FILL2030 project, the ILL will be financing about 40 publications with "gold open access" status by the end of 2020. Please fill out this short [form](#) to request an open-access grant. The funding will run on a 'first come, first served' basis. Check out the reminder on requirements for ILL publications:

[What you need to know.](#)



New procedure for accessing the ILL reactor building (Level C)

From now on, all persons wishing to access the reactor building must undergo a security screening process (known as 'criblage' in French) which could take up to about three weeks. This means that visitor access requests involving access to instruments or equipment inside the reactor building must be submitted more than three weeks in advance. The procedure will be fully-operational by the end of 2019.

[Read more](#)

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