THE EUROPEAN NEUTRON SOURCE

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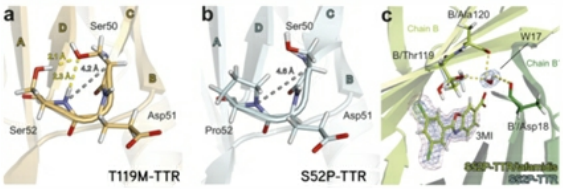
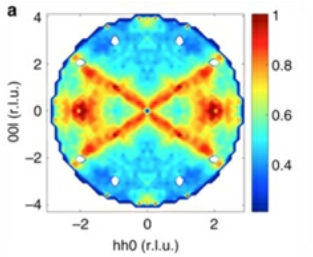
SPOTLIGHTS ON SCIENCE



Researchers reveal the role of a protein in the development of progressive diseases

Transthyretin amyloidosis is a progressive condition, in which abnormally folded forms of an important hormone-transporter protein accumulate as amyloid fibrils/plaques in various parts of the body – resulting in the condition known as familial amyloid polyneuropathy (FAP). The disease affects the peripheral nervous system (sensory perception - pain, touch, heat, sound) and the autonomic nervous system (involuntary functions such as breathing, heart rate, digestion). Other regions such as the central nervous system, the heart, the kidneys and the gastrointestinal tract may also be damaged. The mechanisms underlying this invariably fatal disease, as well as pathways for its prevention, are being revealed by scientists, thanks to the more advanced analysis of a blood hormone-transporter protein using neutron diffraction, mass spectrometry, molecular modelling, and X-ray diffraction. Read more



Defects Drive Disorder

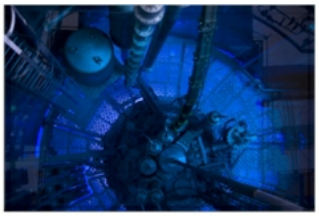
Magnetic materials are made of atoms carrying magnetic moments. Most magnetic materials will 'order' when they are cooled - the magnetic moments will align to create a unique lattice. The precise layout of the lattice depends on the strength of the interactions between the magnetic atoms in the compound. Sometimes, however, the material will not order. The positions of the magnetic atoms and the interactions between them are such that any order is 'frustrated'. There is a lot of research being conducted into the defects behind these 'frustrated magnets', as they could host an array of fascinating physical phenomena. The ILL's high neutron flux is ideally suited to the study of very weak diffuse scattering from disorder, and the use of polarised neutrons on instrument D7 has helped researchers separate the structural features from the magnetic contributions. Read more

Annual Report 2018

The scientific highlights contained in the recently published Annual Report demonstrate how research at the ILL continues to extend the frontiers of science. You can pick up your copy during your next visit to the Institute. An electronic version will soon be available at: https://www.ill.eu/about-ill/documentation/annual-report/

MORE HIGHLIGHTS HERE !

NEWS FOR USERS



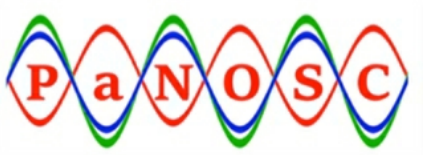
Proposal Round

579 proposals were submitted at the last round. These will be evaluated by the subcommittees on 9 10 April. The proposals accepted will be scheduled during the final 1.5 cycles of 2019. The next proposal deadline is 17 September 2019. The reactor operating schedule can be found at: https://www.ill.eu/reactor-and-safety/high-flux-reactor/cycles/

Mag2Pol: a programme for the analysis of spherical neutron polarimetry, flipping ratio, and integrated intensity data

Mag2Pol is a programme with a graphical user interface, designed for analysing the spherical polarimetry data produced by polarised neutron diffractometers. Nuclear and magnetic structure models can be introduced using space-group symbols and individual symmetry operators respectively, and these can be viewed in an OpenGL widget. The programme calculates nuclear/magnetic structure factors, flipping ratios and polarisation matrices for magnetic Bragg reflections, taking into account structural twins and magnetic domains. Spherical neutron polarimetry data can be analysed by refining a magnetic structure model including magnetic domain populations in a least-squares fit; they can also be correlated with an integrated intensity data set, in a joint refinement. Further features are the simultaneous refinement of nuclear and magnetic structures with integrated intensity data, and the analysis of flipping ratios using either tabulated magnetic form factors or a multipole expansion of the magnetisation density.
This programme is available to all ILL users. If you find it useful for analysing and publishing your data, please cite it as J. Appl. Cryst. 52 175 (2019)
Read more

GENERAL NEWS



The H2020 project “PaNOSC” launched - making FAIR data a reality

Large-scale research infrastructures produce a huge amount of scientific data on a daily basis. This poses storage and (re)usability challenges, which are best addressed by the “FAIR” paradigm: Findable, Accessible, Interoperable and Re-usable. Data policies and technologies need to be adapted and evolved on the basis of FAIR, to ensure that the broadest range of stakeholders benefit from a coherent ecosystem of data services. 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 note on requirements for ILL publications: what you need to know.

Previous issues of the ILL newsletter

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