



ILL newsletter

JANUARY 2018

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NEWS FOR USERS



REACTOR RESTART!

We are planning to restart the reactor on 1 March 2018 and the user programme on 8 March. The dates for the second cycle will be fixed by the end of January. Due to the existing backlog of experiments from 2017, these first two cycles will be used mainly to perform experiments accepted in April 2017. A third reactor cycle is planned after the summer, when new proposals accepted during the on-going proposal round will be scheduled. For urgent beam time requirements, we strongly encourage you to apply for Director's Discretionary Time (DDT). We will do our best to schedule accepted DDT requests during the first two cycles in 2018. [More](#)

REMINDER : CALL FOR PROPOSALS

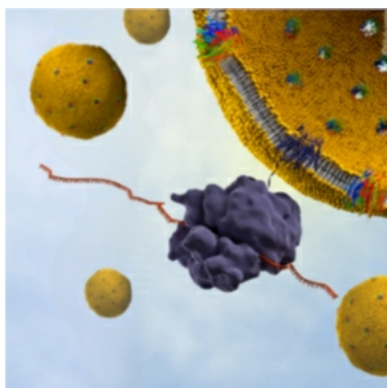
The next **deadline** for proposal submission is Wednesday **14 February 2018**, midnight (EU time).

ILL 2/3 member country rule : ALL proposals will be considered and a few % of the total beam time will be granted to proposals not complying with this rule on the basis of scientific excellence.

Outreach for new users : A limited beam time access for new users from non-member countries will be also available via the EU project FILL2030. Proposals will be evaluated via the regular panel meetings. For more information please contact the ILL user office. Please note that IN16B accepts for the first time **BATS proposals** for a 'low resolution, time-of-flight mode' ($3.5 < dE < 8 \mu\text{eV}$) – note that hot commissioning of BATS will take place in March.

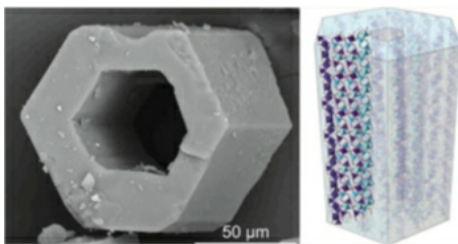
40 Tesla / 2K cryomagnet available on IN22 : the pulsed horizontal field cryomagnet developed jointly by the LNCMI Toulouse and the ILL is now available. [More](#)

SPOTLIGHTS ON SCIENCE



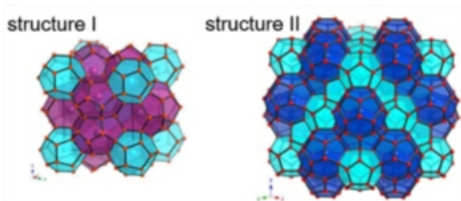
Neutrons reveal hidden secrets of the hepatitis C virus

p7 is a protein essential for the release of the hepatitis C virus, however little data is currently available on the way it interacts with its environment, hindering the development of vaccinations for it. During an experiment at the ILL, researchers have observed the structure of a functional p7 protein within its native environment for the first time using neutron reflectometry. The specific protein insertion mechanism observed will help to outline potential target mechanisms for future drug development. [More](#)



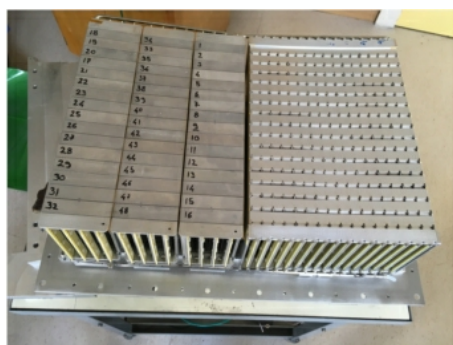
Deepening the understanding of multiple metal elements structures

Materials containing multiple metal elements are important for various applications as the combination of different metal cations provides new or enhanced properties, which cannot be obtained through the use of just one metal. A recent study involving neutron diffraction experiments has enabled the development of a new, general strategy to produce complex materials with metal cation arrangements that can be controlled on demand for desired applications; a result that will be of great importance in various fields. [More](#)



Fast methane translational diffusion at the interface of two clathrate structures

Gas clathrate hydrates have attracted considerable attention over the last decade for their potential as a geo-organic fuel resource. For clathrate hydrates of methane, structure I is the thermodynamically preferred structure, and structure II is a metastable form that is kinetically favoured. Structure II can persistently coexist with structure I in methane clathrate hydrates under high pressure. A recent study conducted at the ILL by an international collaboration has exploited the exceptional persistence of structure II methane clathrate hydrates under high pressure, in order to measure the translational diffusion of methane molecules at the interface of clathrate structures I and II. [More](#)



A new Multi-Grid detector tested by an ILL-ESS team at the LLB

Multi-grid detectors, introduced at the ILL in 2010, have shown great potential to replace Helium-3-based detectors, and as a result, they will equip several instruments at ESS. One of the prototypes developed at the ILL in collaboration with ESS has been equipped with 2 grid sectors, each of them occupying the same sensitive volume. The first sector is made of 3 columns of 16 standard grids, and the second one is made of one single column of 16 grids with enlarged dimensions. The expected gain in efficiency with the enlarged grid was measured in December 2017 at the LLB. This work has been financed by the EU BrightnESS project. [More](#)

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