

ILL - a primer for the Tour.

The ILL, with more than 30 neutron beam instruments, is one of the most powerful neutron sources in the world. The ESRF is a 3rd generation 6 GeV synchrotron offering world-class intensities for more than fifty beam lines. The joint ILL-ESRF-EMBL site in Grenoble exemplify the complementarity of the scattering techniques. Neutrons are capable of probing magnetic materials with ease, and especially sensitive to contrasts of hydrogen and deuterium, and minimal sample damage and great penetration allowing a wide range of sample environments. Some of these aspects too are matched with high energy X-rays; more important is their much higher intensities opening up fast kinetic measurements inaccessible to neutrons. Joint scientific activities are stimulated by the recent creation of the Partnership for Structural Biology, PSB, containing the ILL's Deuteration Laboratory, and there are current plans for similar Partnership in Soft Condensed Matter.

The SAS instruments at Grenoble are classic pin-hole cameras. At the ESRF the principal SAXS instrument is ID2, which also includes a novel ultra small angle and wide angle detector array which add to the versatility of this 10m instrument, The Dutch-Belgian Group, DUBBLE, at the ESRF operate a second SAXS instrument on BM26 with a maximum camera distance of 8m, also with WAXS, and energy ranges 5-18KeV.

At the ILL, D11, the original SANS instrument now has a maximum sample-detector distance of 36m, and usable neutron wavelengths between 4-20Å. D22, with a larger detector, has a maximum length of 20m; with a higher flux at shorter wavelengths it can be used routinely for kinetic and stopped-flow measurements. A new instrument, D33, is at the detailed design stage.

In large-scale structure studies reflectometry is also of importance at the ILL for magnetic, interface and membrane studies. D17 is a dedicated, highly versatile, vertical plane reflectometer, and ADAM too is partly available for use, and a new instrument, FIGARO, is under construction.

Both ILL and ESRF have high intensity/high resolution diffractometers for powders and single crystals. These are exceptional in enabling a wide variety of measurements with samples in very demanding environments of pressure temperature and external fields.

PSB <http://psb.esrf.fr/>

ID2 <http://www.esrf.eu/UsersAndScience/Experiments/SCMatter/ID02/>

DUBBLE http://www.esrf.eu/exp_facilities/BM26/dubblemain.html

D11 <http://www.ill.fr/YellowBook/D11/>

D22 <http://www.ill.fr/YellowBook/D22/>

D17 <http://www.ill.fr/YellowBook/D17/>

ADAM <http://www.ill.fr/YellowBook/ADAM/>