

Last week, a team of researcher used a new type of polarisation analyser at ILL's instrument SAM.

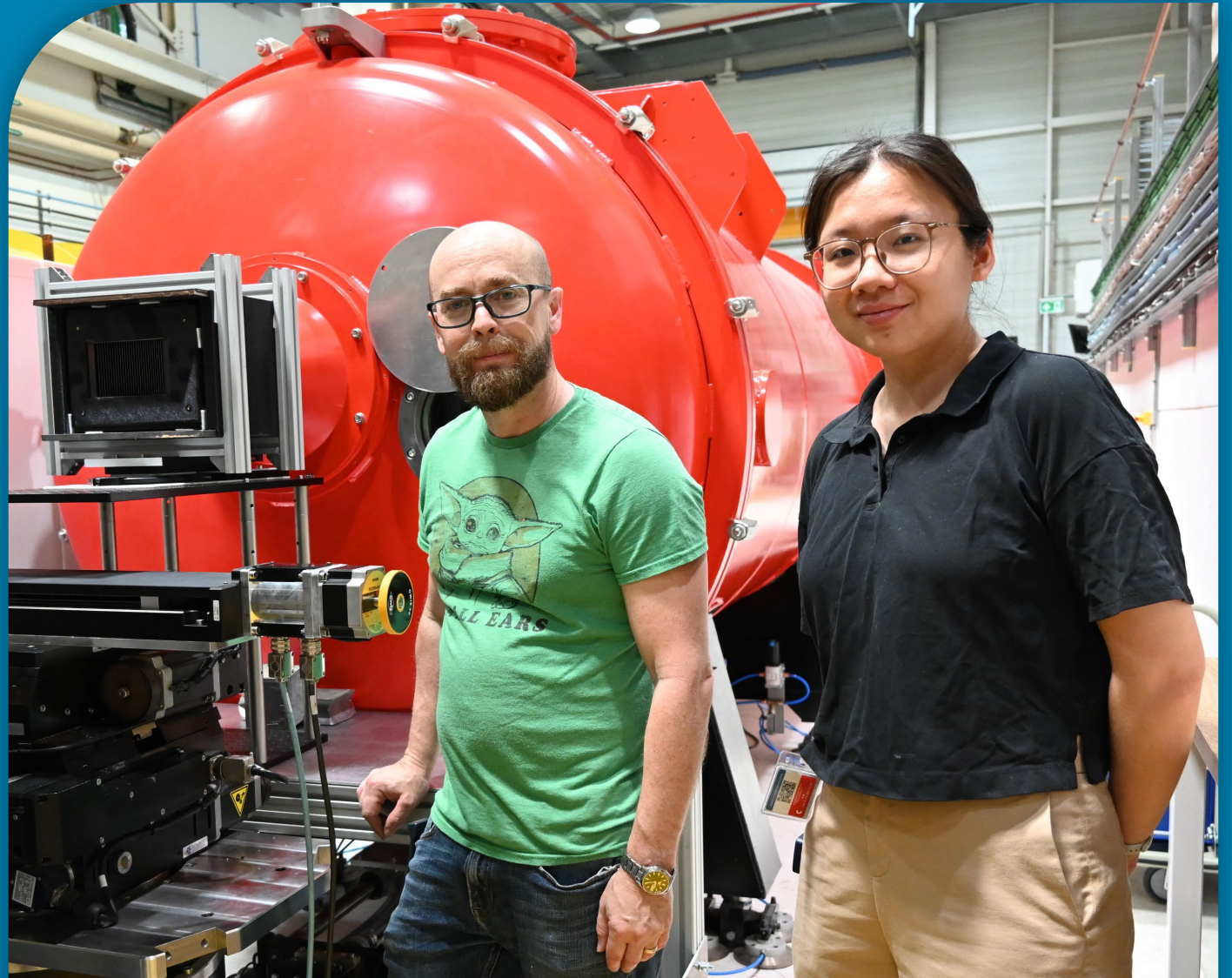


"For this experiment, you need a SANS instrument with a very high flux and a very good beam polarisation - SAM is an ideal place"

Lorenzo Metilli, instrument responsible

The new device is a Transmission Wide Angle supermirror Polarization Analyser (tWAPA). It was designed in collaboration between Swiss Neutronics and JCNS.

Initially built as a prototype to test concepts for a larger-angle device on SPHERES at FRMII, this device is meant to become an independent tool for diffraction and also reflectometry experiments.



Earl Babcock and Chuyi Huang are neutron polarisation experts. Earl led the development team. Chuyi joined the team as a Marie Curie fellow.

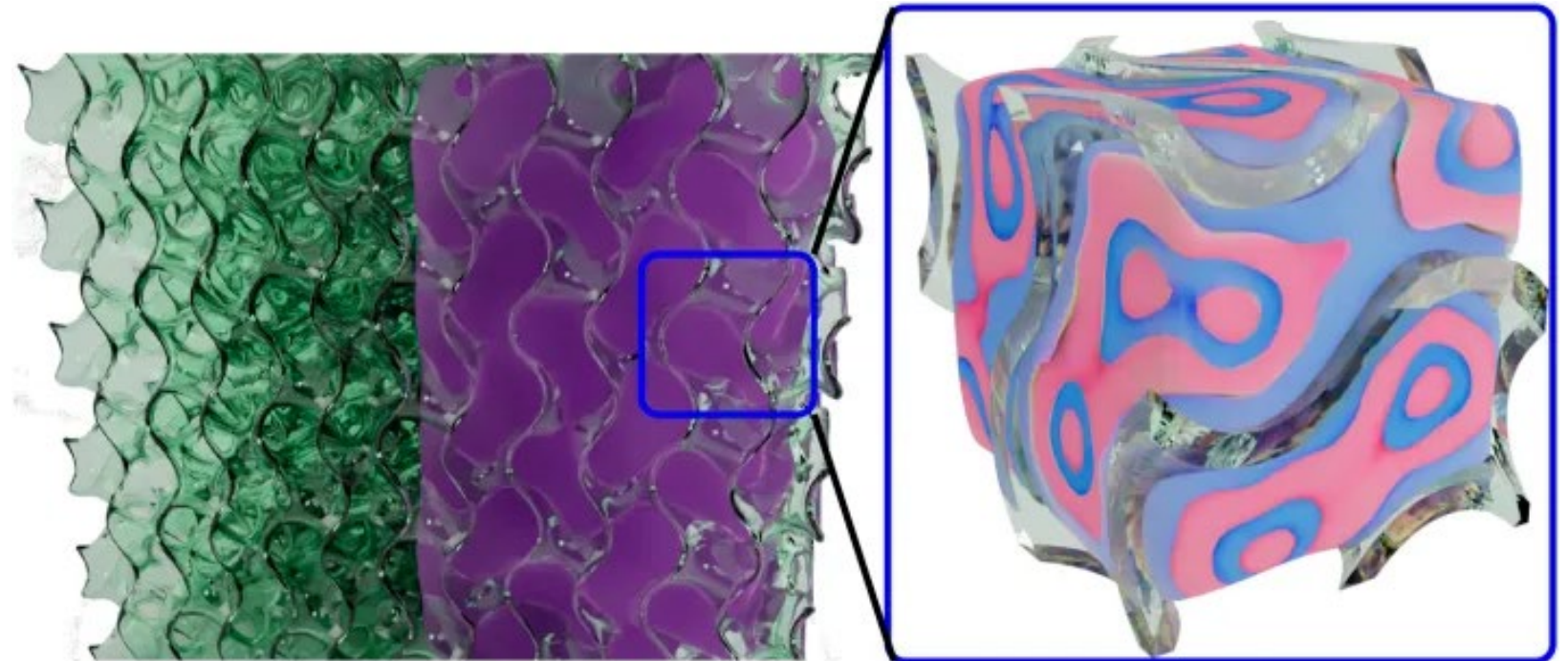


Some adaptations were needed, for example to create space between the sample and the new supermirror device, which needs to be under a magnetic field



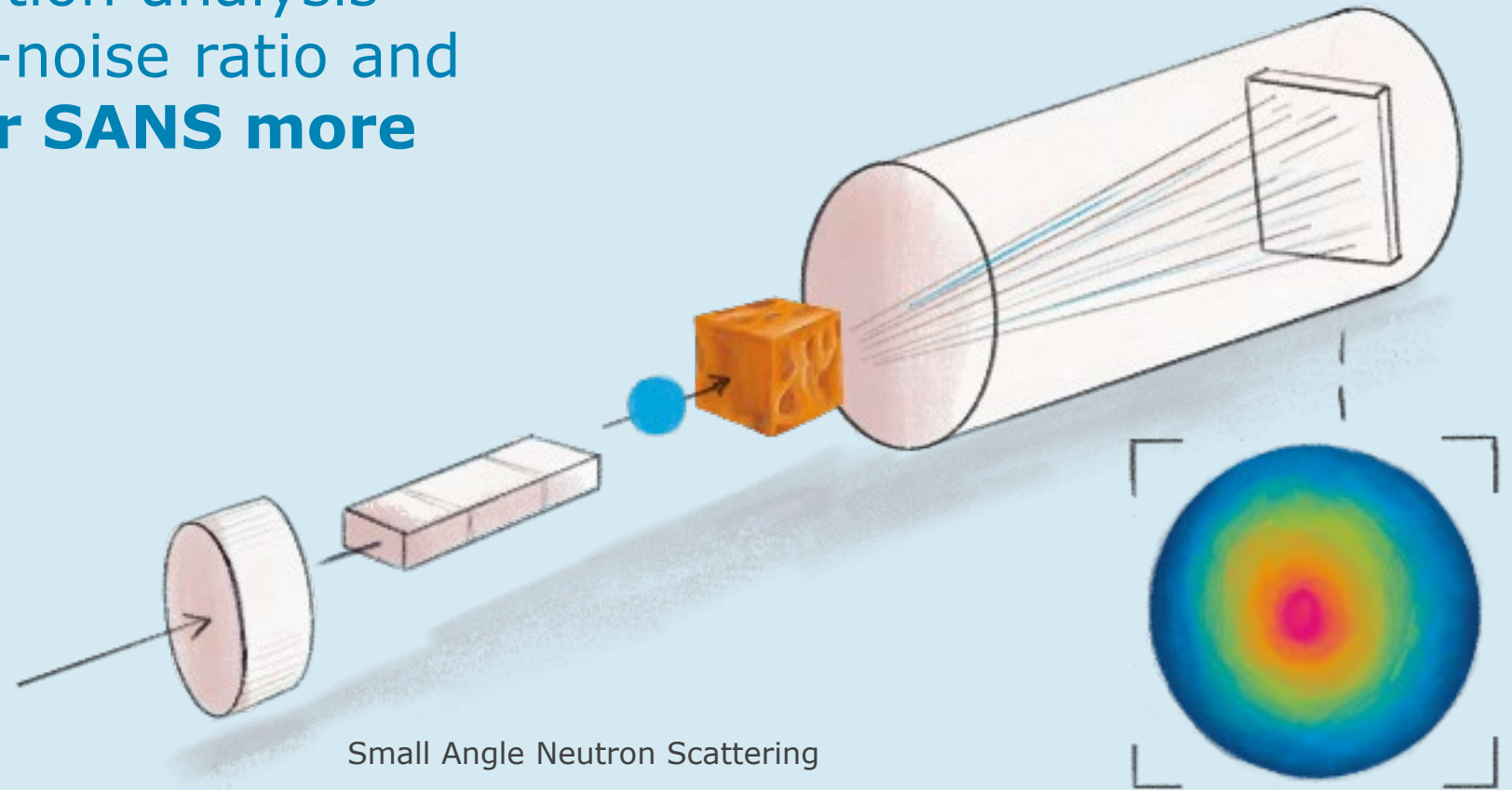
This was the first scientific application of the device. The goal was to characterize water pockets in an ionic liquid, following up on a previous work with experiments on WASP.

Structure and mobility in ionic liquids are fundamental questions for example fuel cell applications.

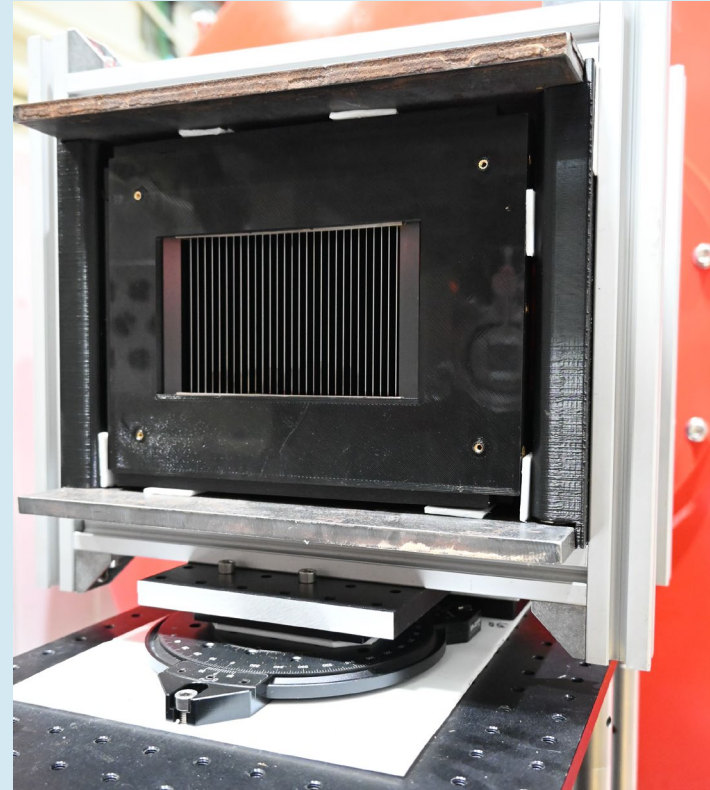
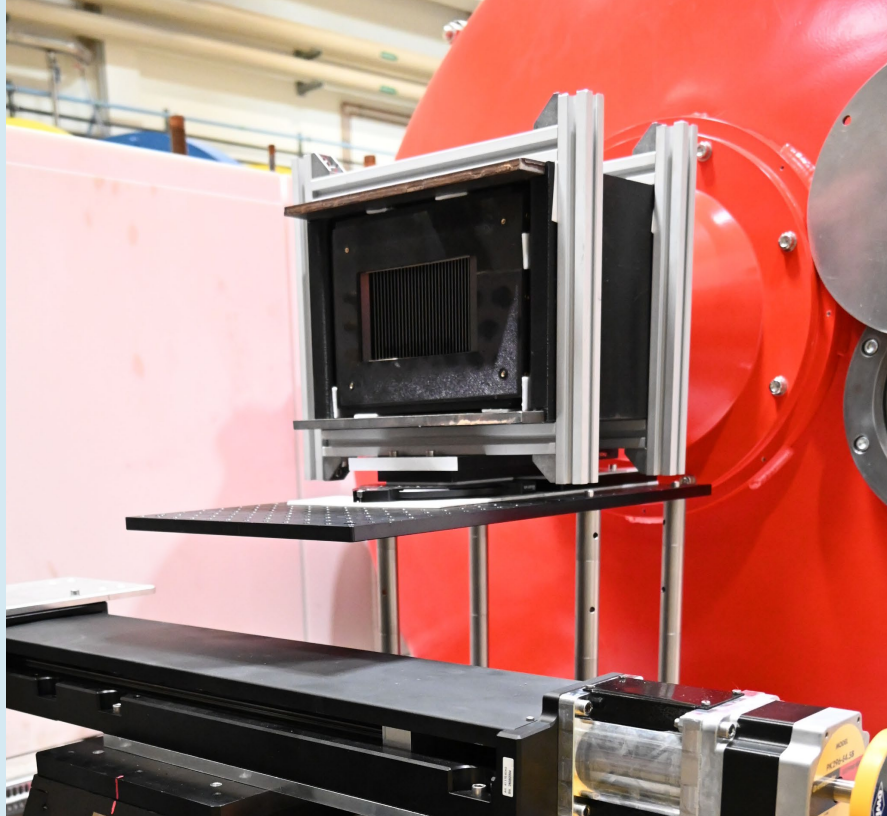


H. Frielinghaus et al., Front. Phys. 10, 872616 (2022)

By separating coherent and incoherent scattering, polarisation analysis improves signal-to-noise ratio and makes **soft matter SANS** more powerful.



The new device has the potential to make **soft matter SANS polarisation analysis** more readily accessible and straightforward to use.



Providing a good resolving power - when the excellent resolving power of He-3 filters is not necessary and a steady-state device is an advantage – simpler analysis, experiments and planning.



New science and innovation require ever better tools.

The constant development of neutron technologies is the secret for addressing ever more challenging questions and reach new scientific domains and communities