

New Hardware for Soft Materials

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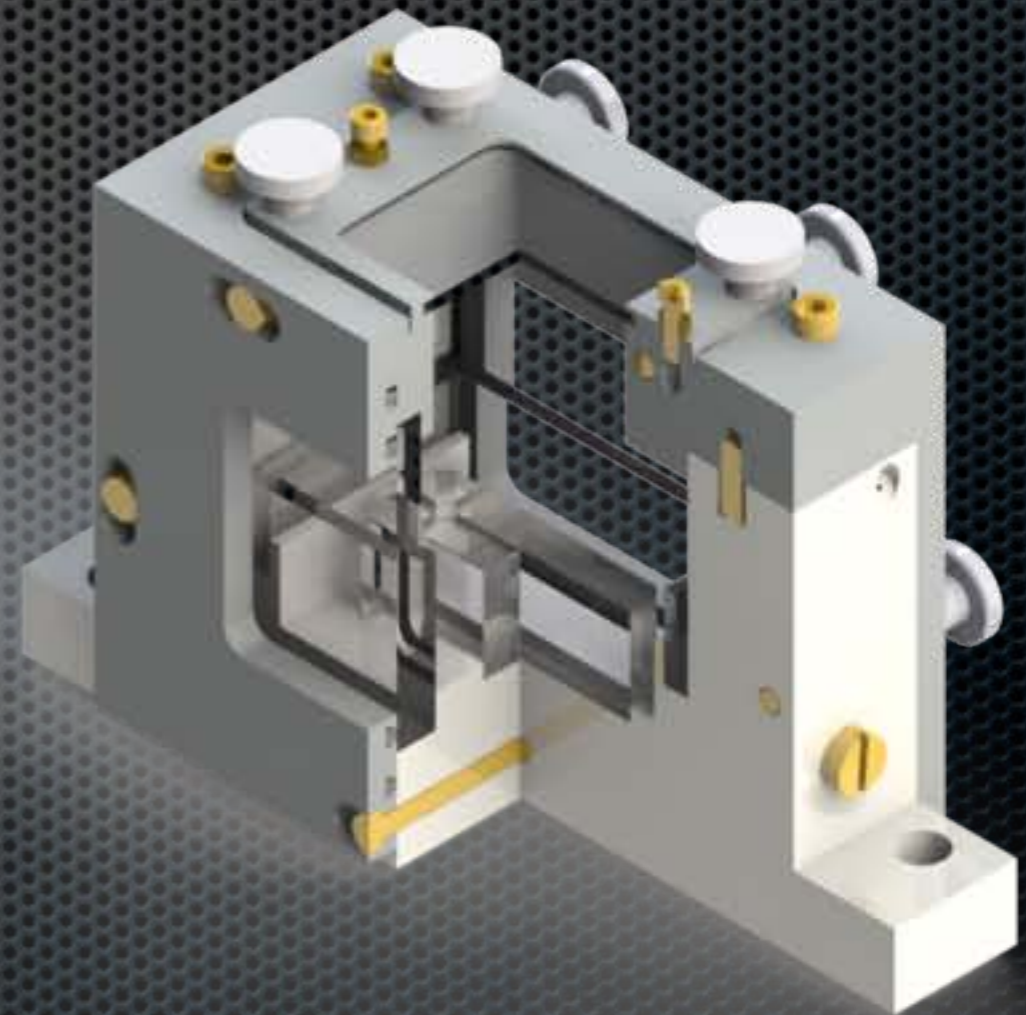
Soft Materials

- ✦ Liquid/liquid cell for neutrons & X-rays
- ✦ New head for stopped-flow chambers
- ✦ 5 kbar cells for NSE & SANS
- ✦ 5 kbar flat neutron windows cell
- ✦ Humidity chamber - thanks Dirk ;-)

Liquid/liquid cell for neutrons

Investigate liquid/liquid interfaces with horizontal reflectometers

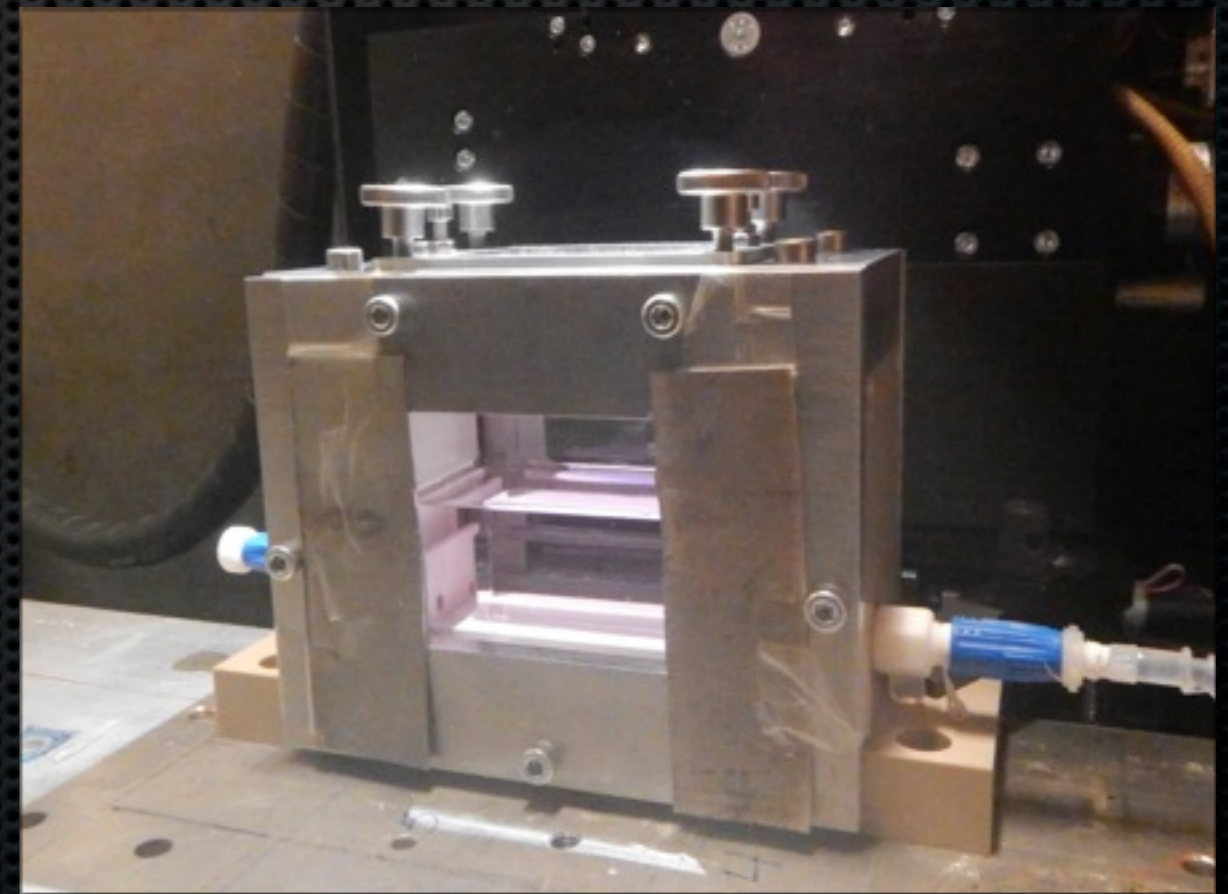
- ✦ 40 mm optimized neutron path
- ✦ Incident beam coming from below or above the interface through quartz
- ✦ Flattened meniscus
- ✦ Reduced sample volume
- ✦ Syringe ports for filling the cell
- ✦ Permanent visual access



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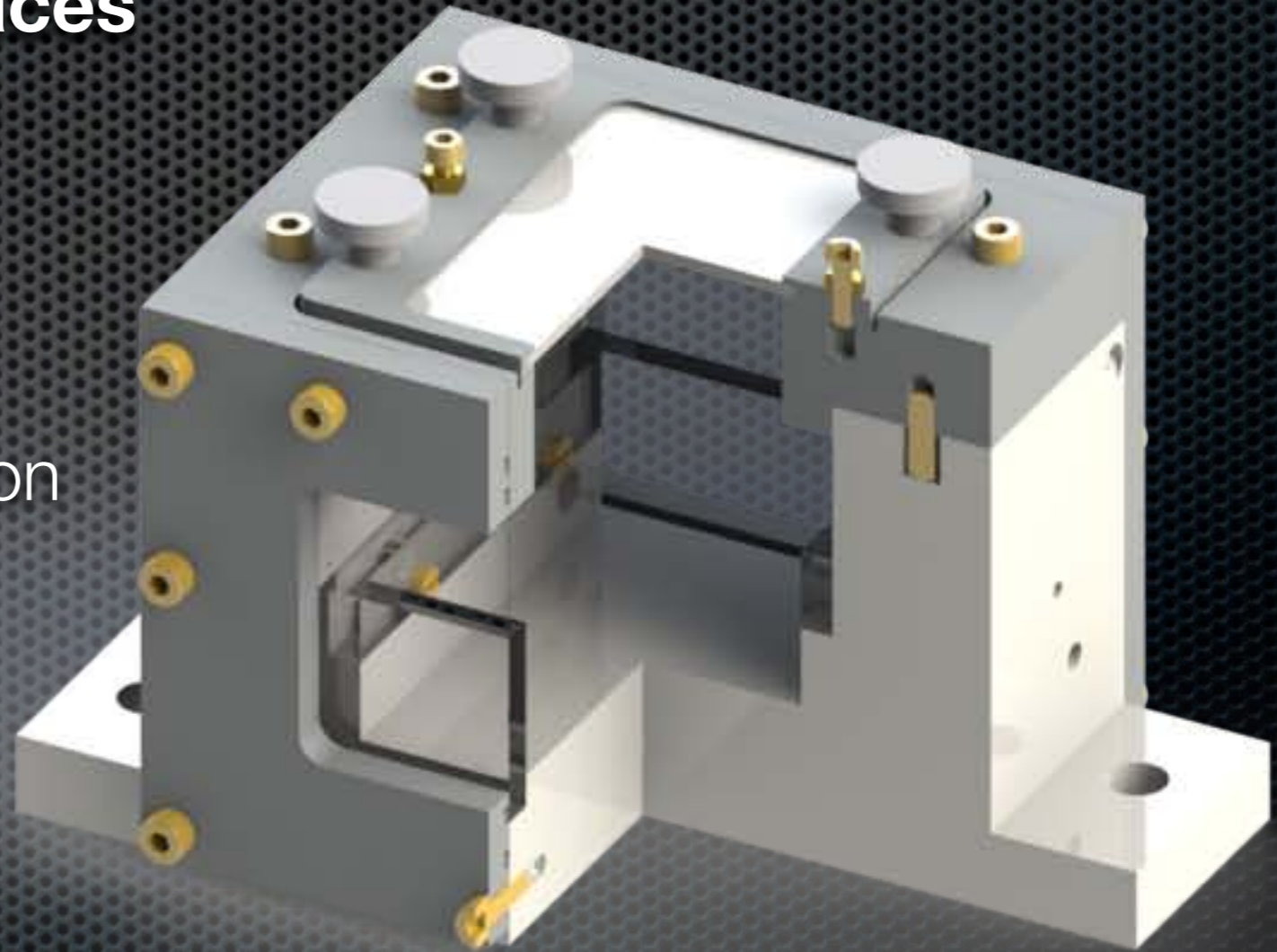


Figaro @ ILL

Liquid/liquid cell for X-rays

Investigate liquid/liquid interfaces with horizontal reflectometers

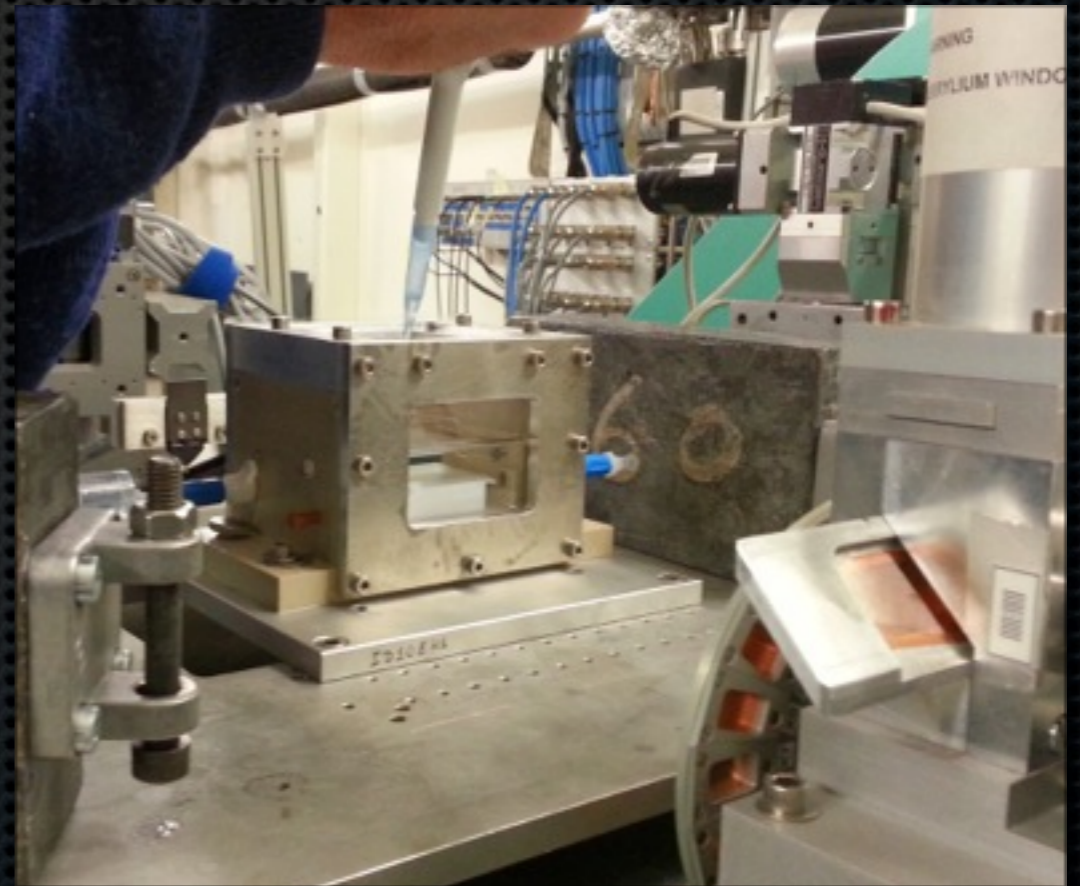
- ✦ 70 mm optimized X-ray path
- ✦ Incident beam coming only from above the interface through kapton
- ✦ Flattened meniscus
- ✦ Reduced sample volume
- ✦ Syringe ports for filling the cell
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Liquid/liquid cell for X-rays

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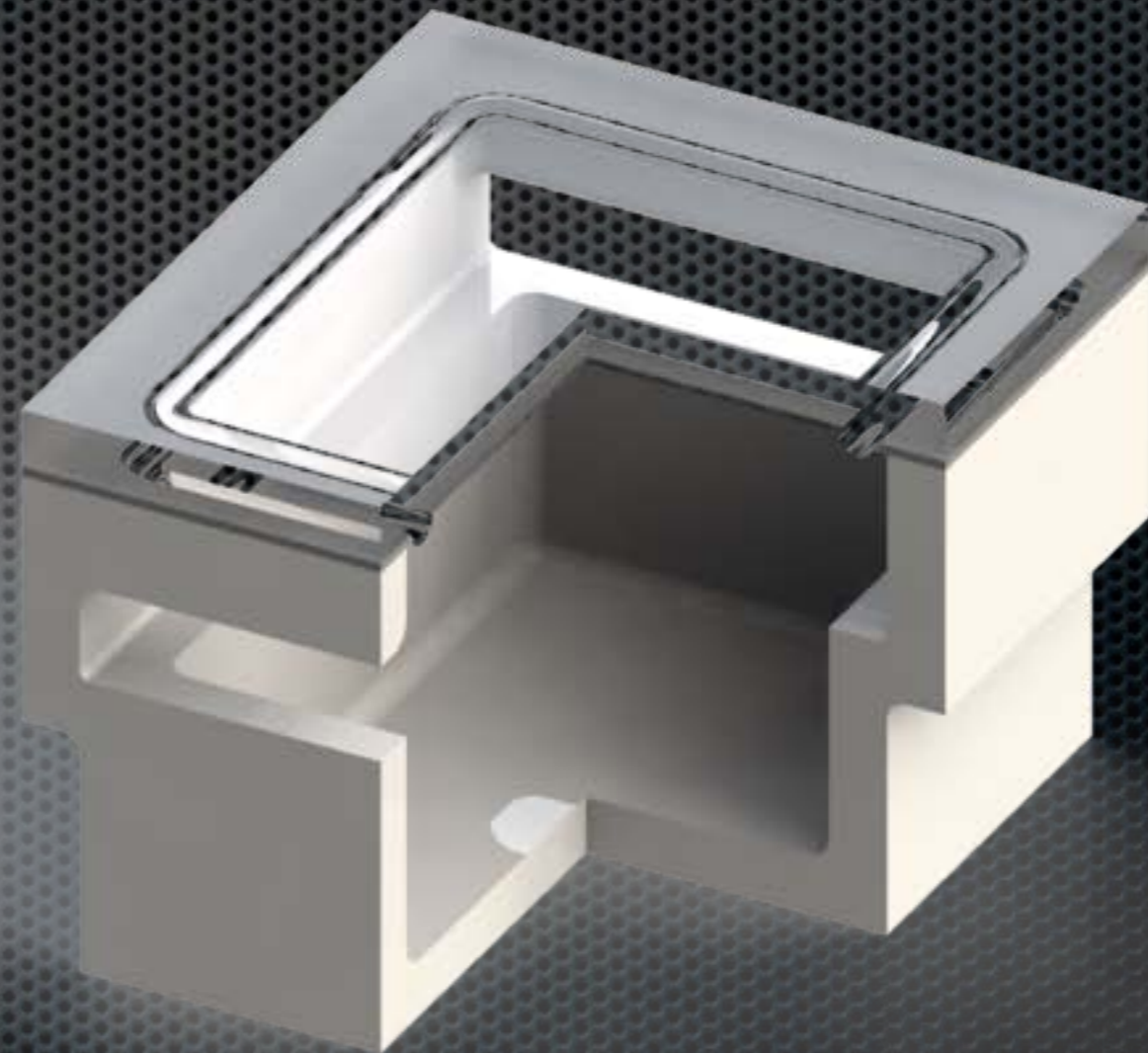


ID10 @ ESRF

Liquid/liquid cells...

Forget
machinists!

Work with
glass makers!



Master glass maker @ ILL

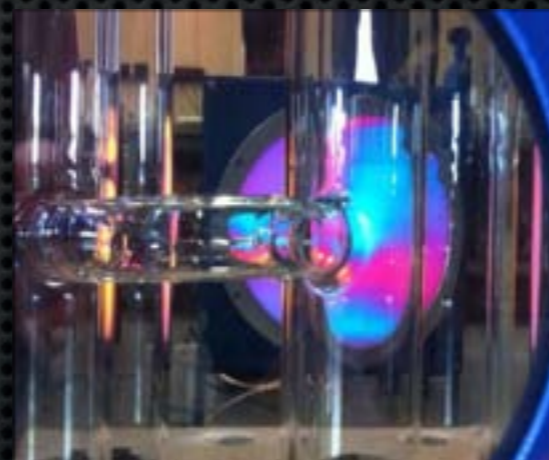


Christian Lazzarotto - lazzarotto@ill.fr

Available services: glass making, glass blowing, reparation & training.

More than 50 different types of glass: quartz, Pyrex[®], Ge180[®], crystal, ordinary glass, leaded glass, electronic glass, glass-metal welding, glassware, custom parts,

...

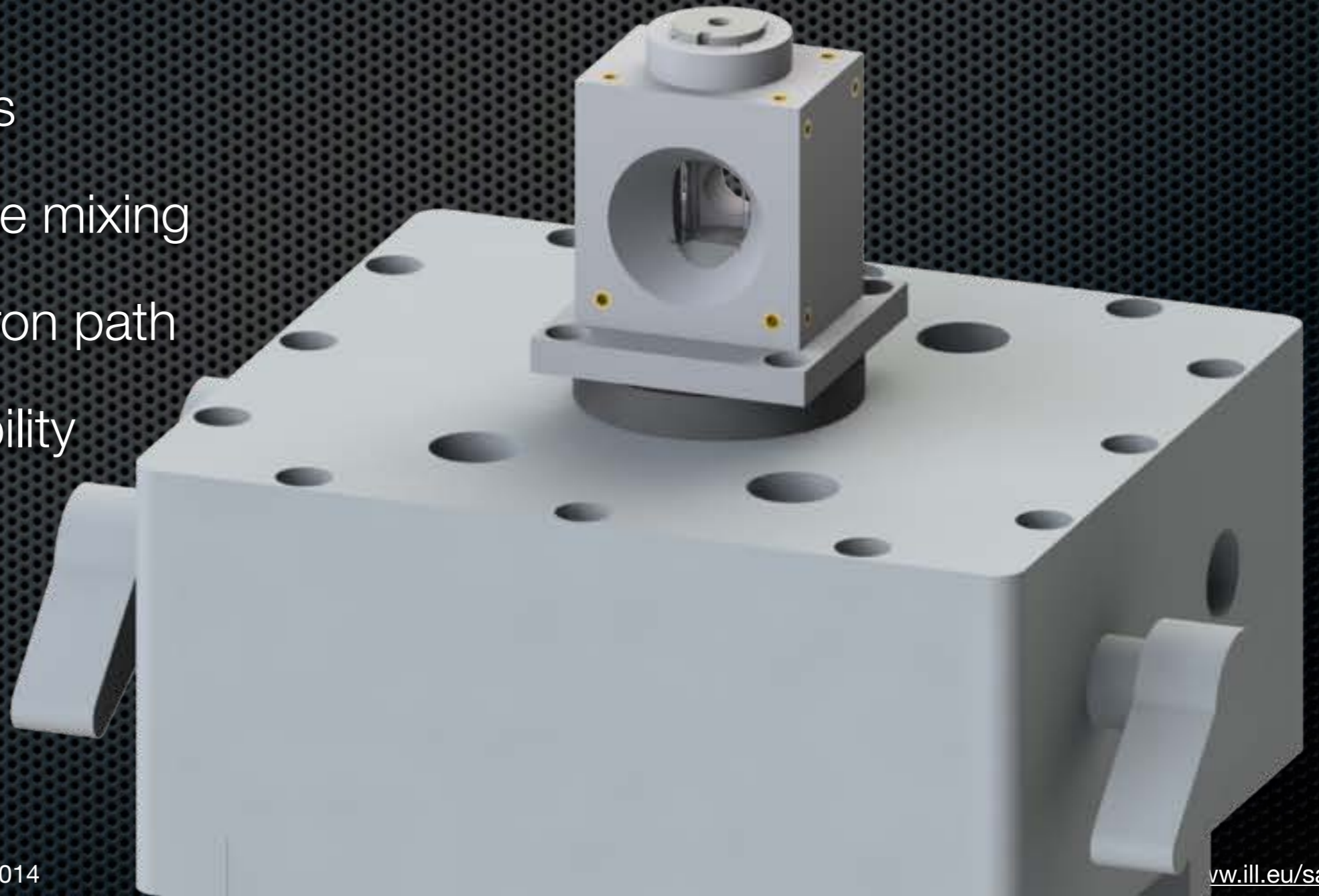


Cold working glass:
Cutting, machining, drilling,
honing & polishing.

New observation head for stopped-flow chambers

Needs

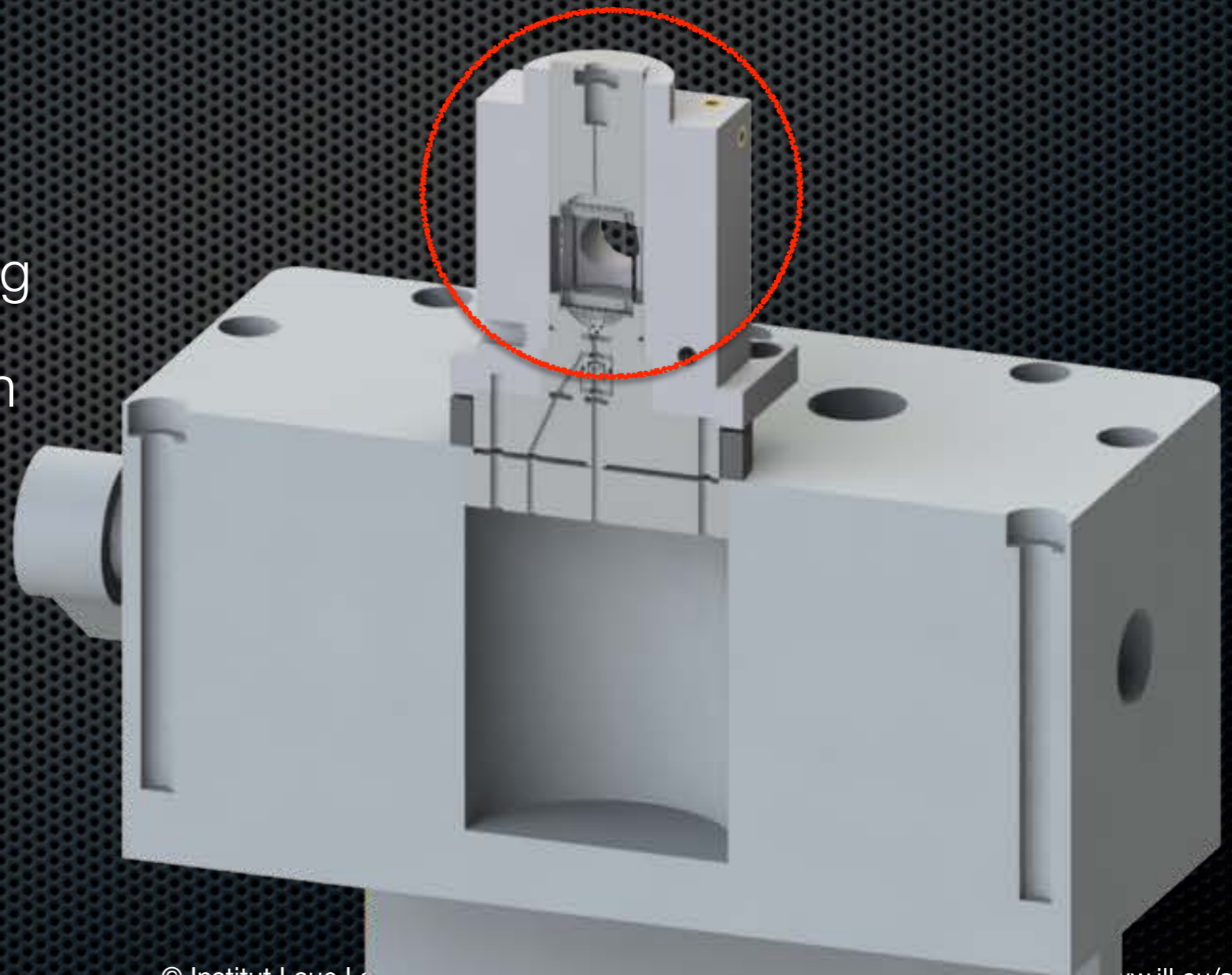
- ✦ Reduced wastes
- ✦ Improved sample mixing
- ✦ Selectable neutron path
- ✦ Improved T stability



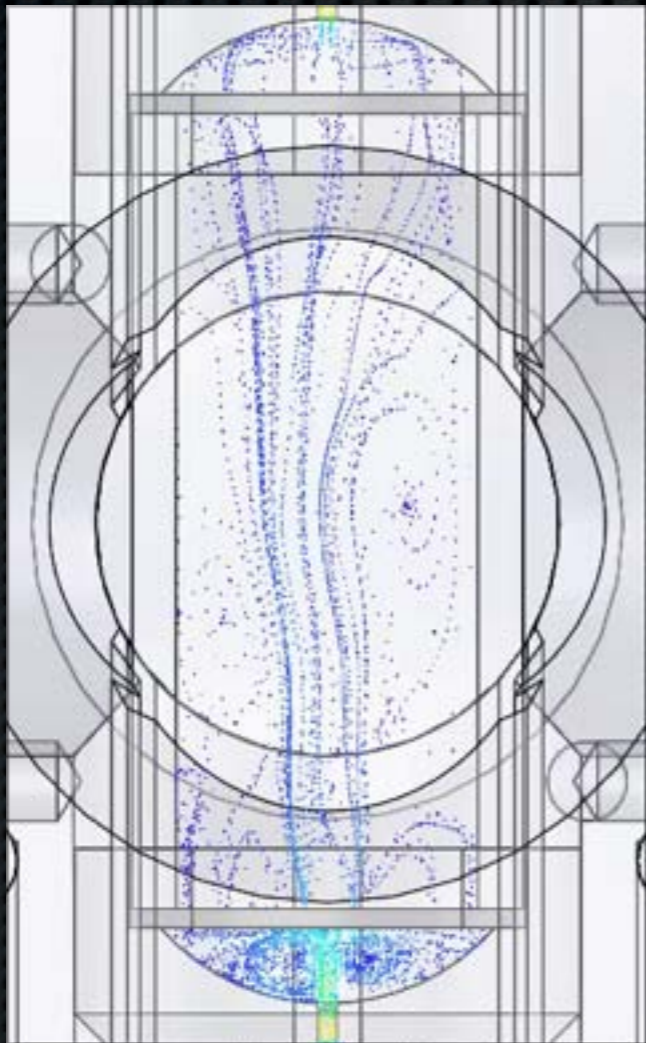
New observation head for stopped-flow chambers

Needs

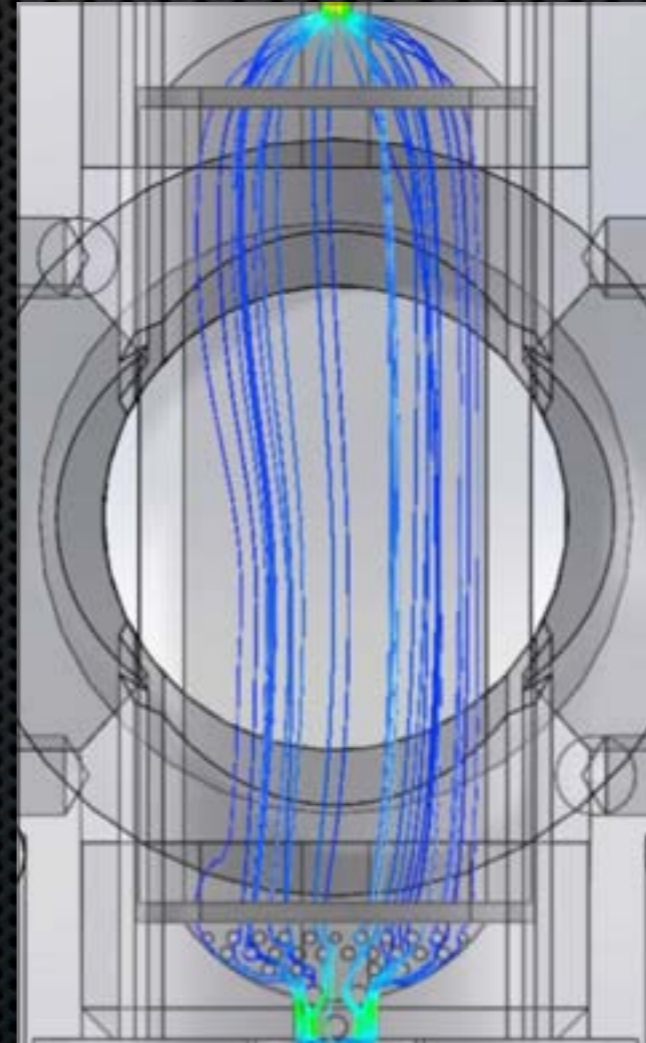
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New observation head for stopped-flow chambers



Old design

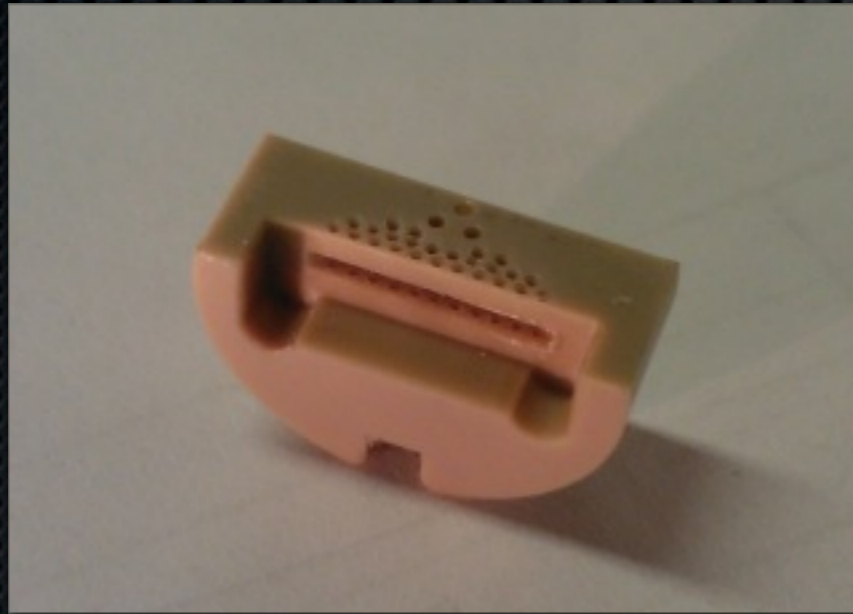


With damping grid

New observation head for stopped-flow chambers

Old design

New observation head for stopped-flow chambers



We love working with Andy, Colin, Oleg *et al.* (ISIS)
Thanks for their great help !

New observation head for stopped-flow chambers

New design

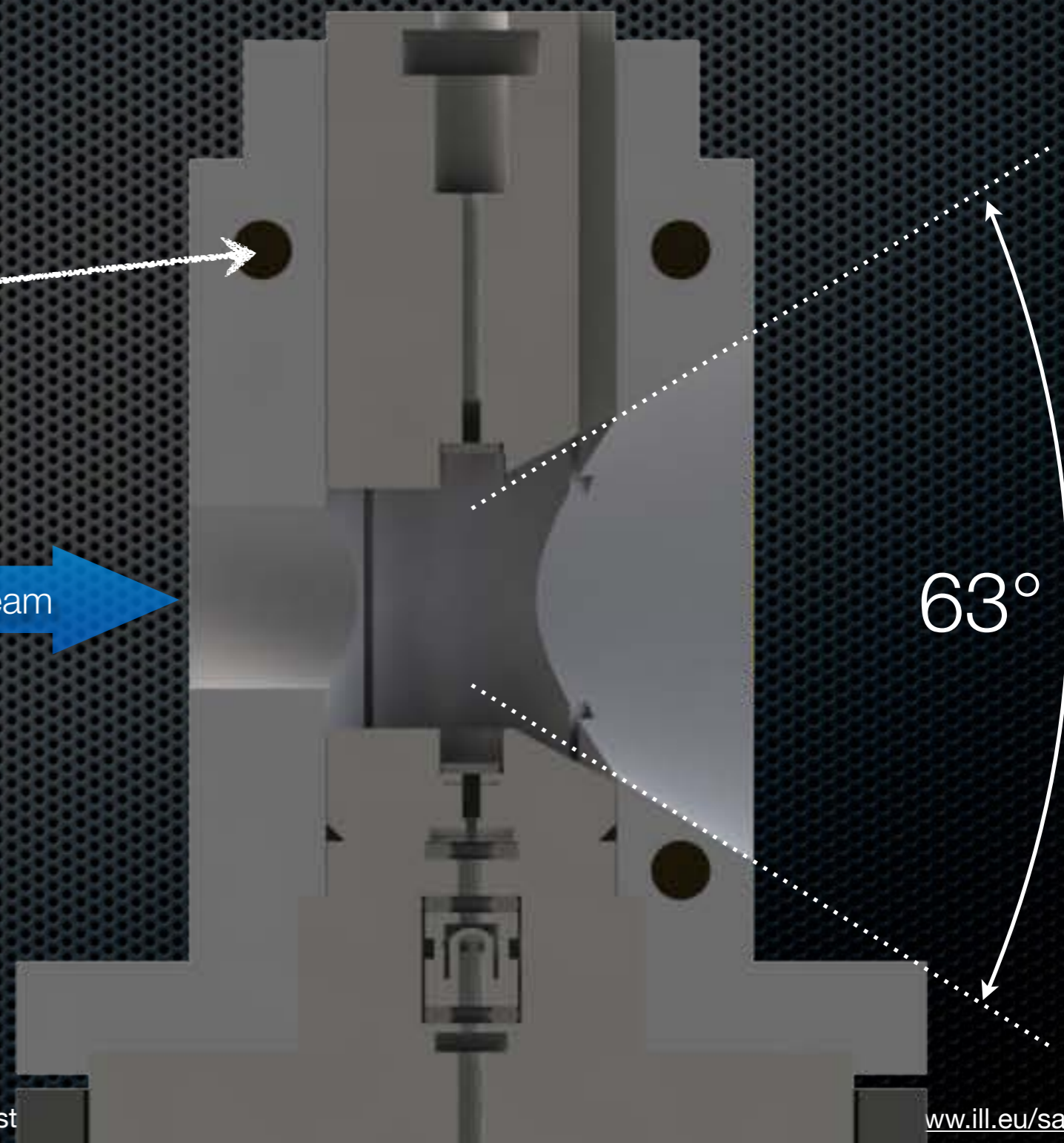
New observation head for stopped-flow chambers

Fluid circuit plugged
to schiller for T control



Perspectives:

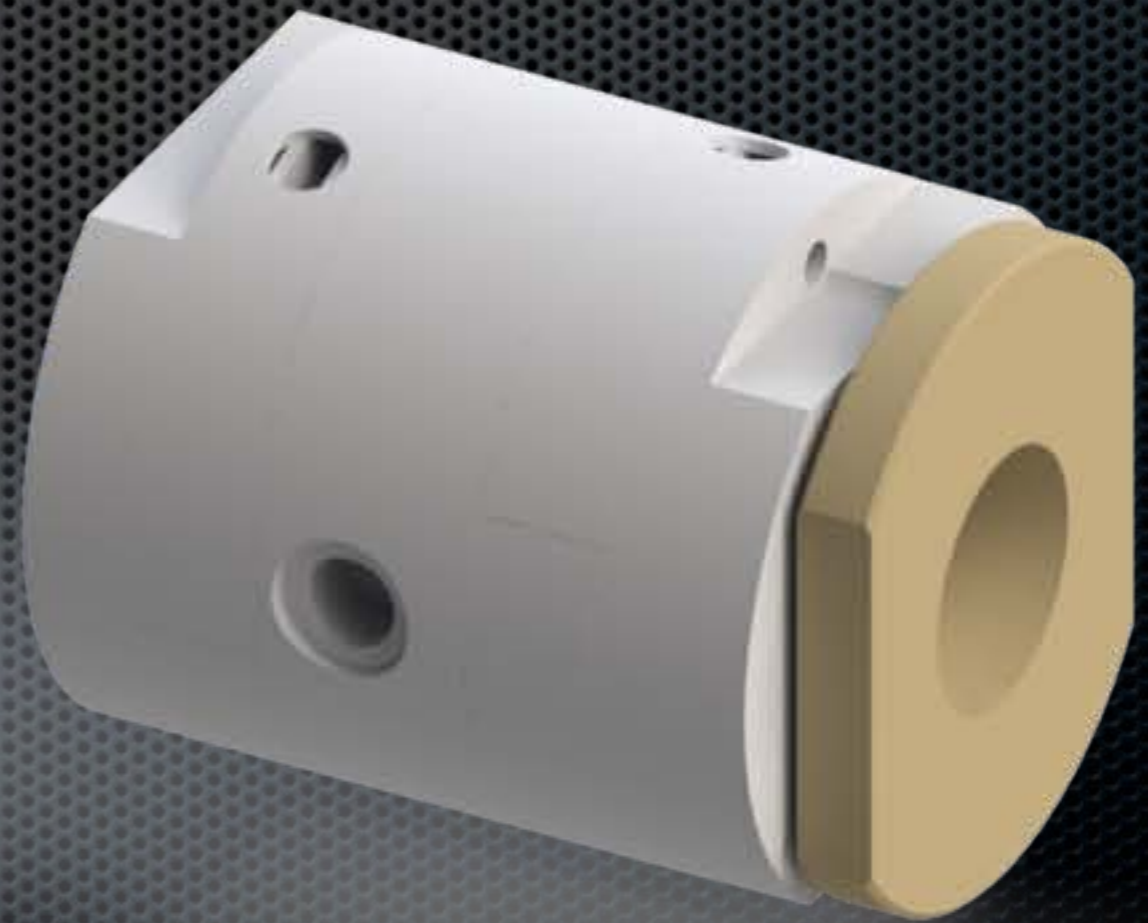
- ✦ add insulating envelope
- ✦ use different neutron paths



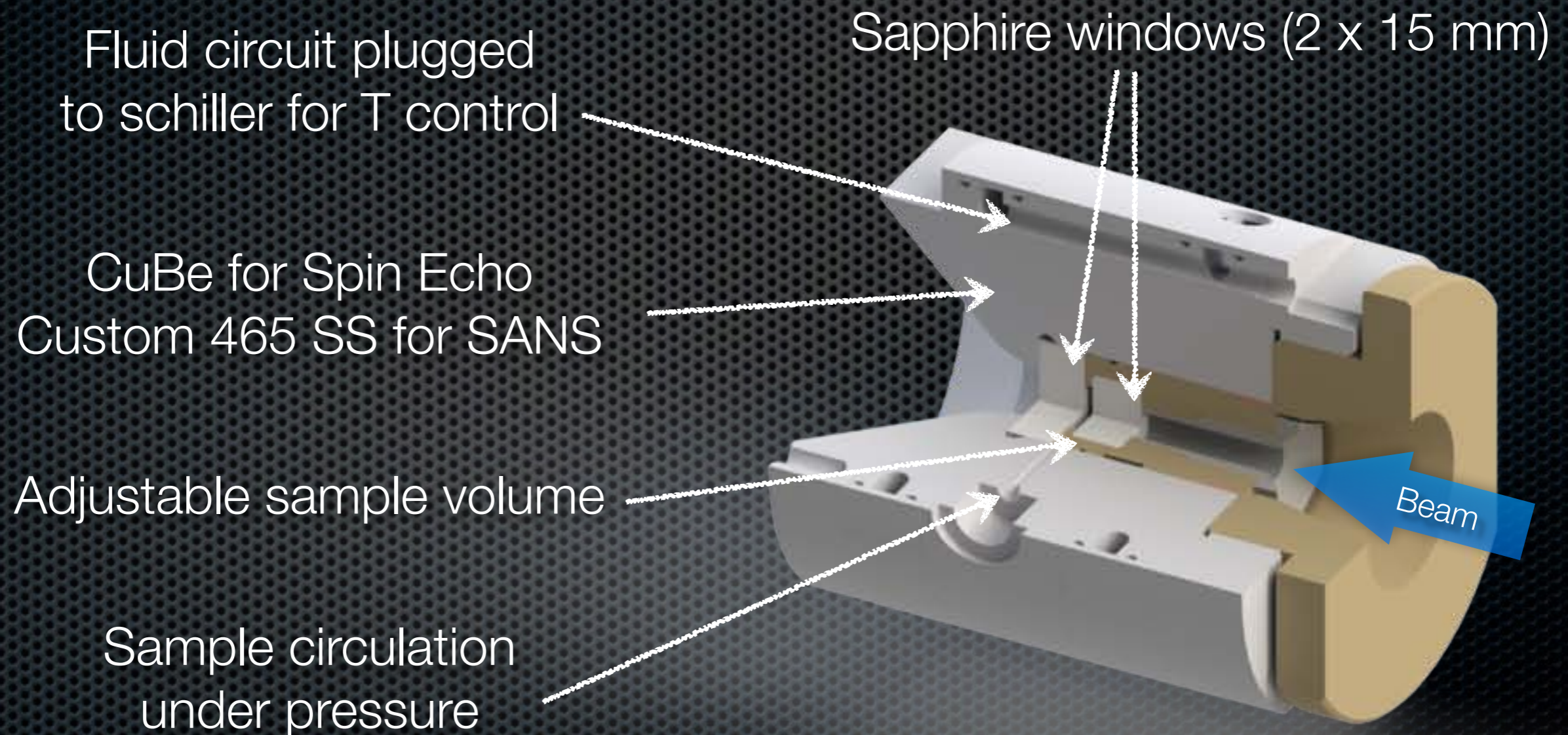
5 kbar cells for NSE & SANS

Needs

- Non-magnetic for Spin Echo
- Bio-compatible
- 45° access to scattered beam
- No diffuse scattering
- Easy to manipulate and clean
- T controlled (0 - 100 °C)



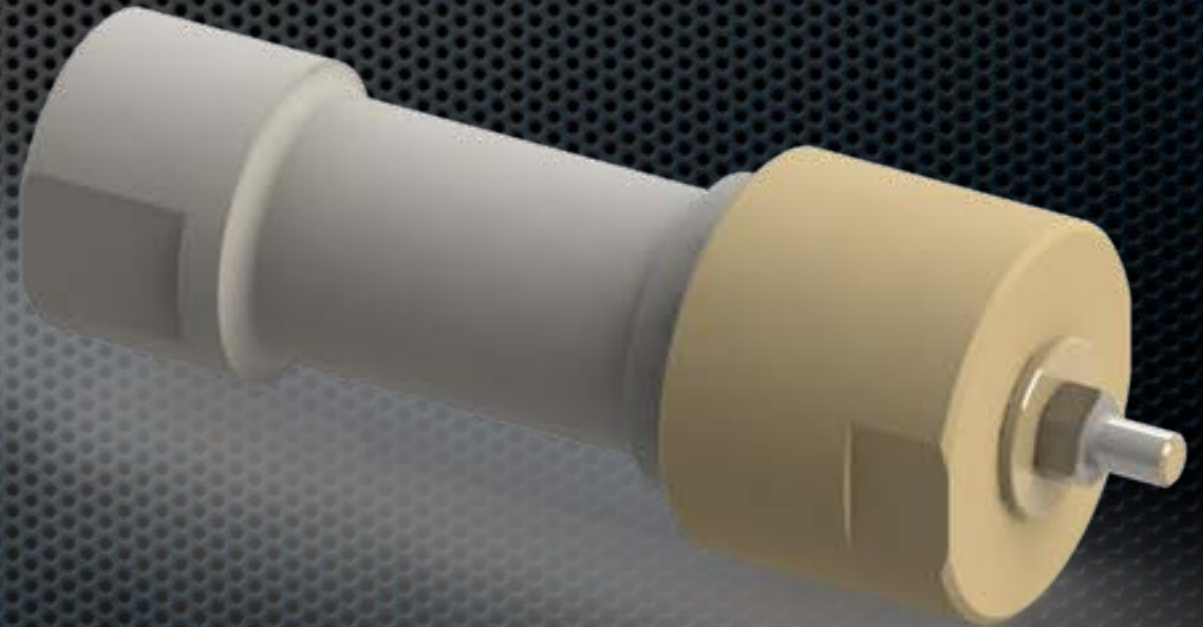
5 kbar cells for NSE & SANS



5+ kbar flat neutron windows cell

Needs

- Investigate biological samples on back-scattering spectrometer
- Pressure controlled up to 5-7 kbar
- Flat windows to simplify data analysis
- Easy to manipulate and clean



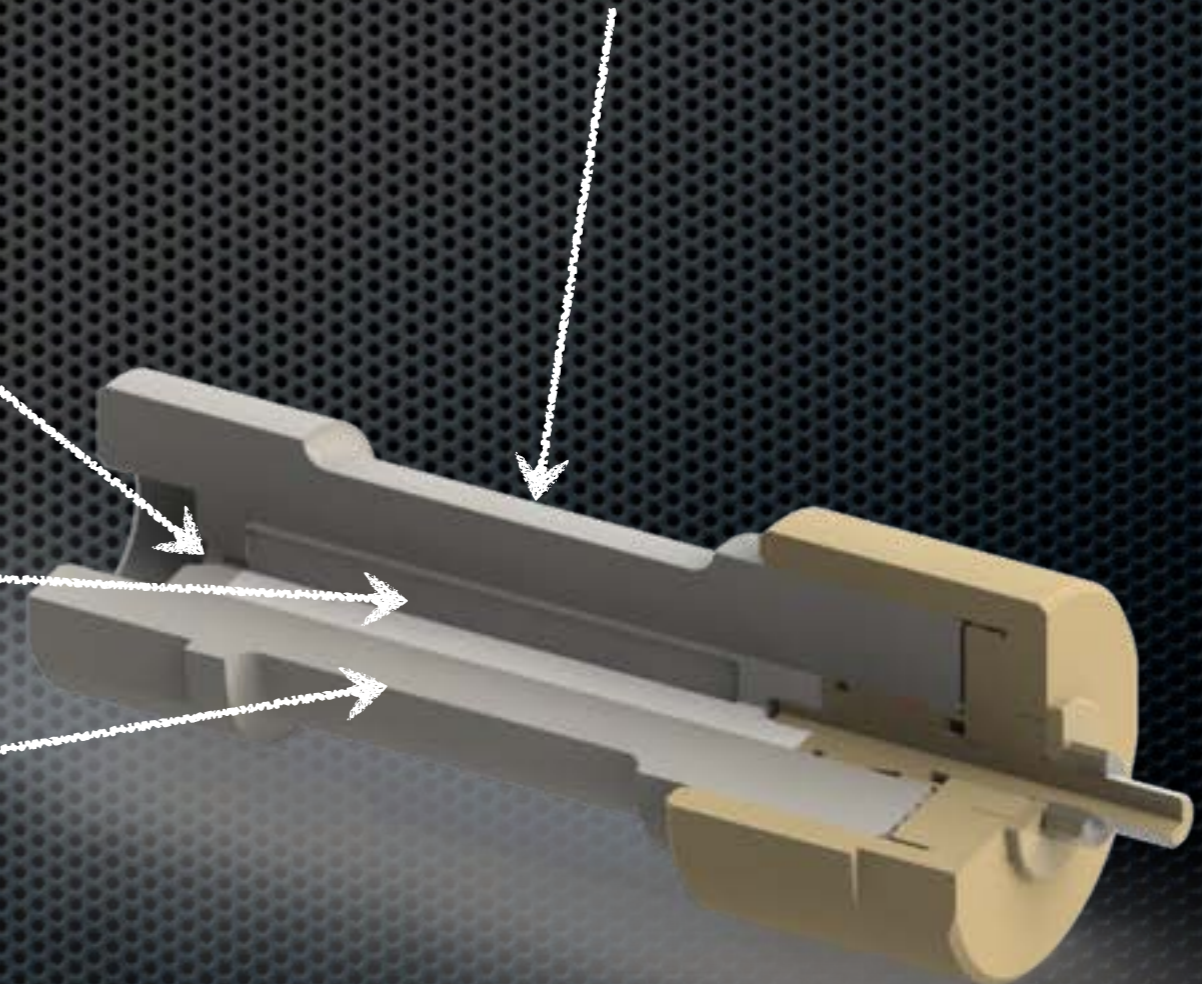
5+ kbar flat neutron windows cell

10 x 50 mm² max beam section

Access to sample volume

Removable aluminium insert
1-2-3 mm thick sample

TiZr body



Very special thanks to...

*S. Baudoin, B. Demé, G. Fragneto, F. Ivens, C. Lazzarotto, E. Lelièvre-Berna,
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Thank you for your attention