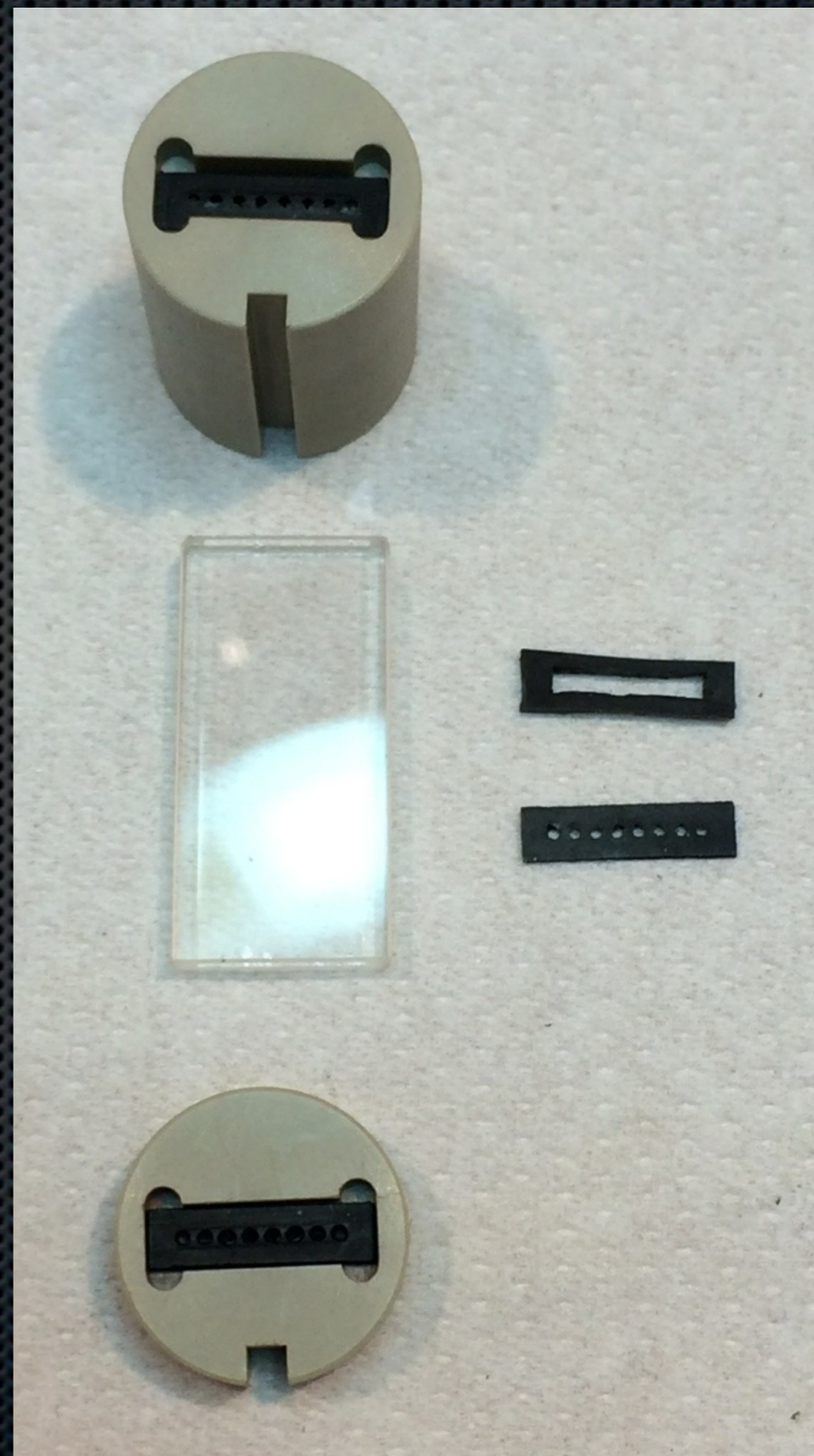
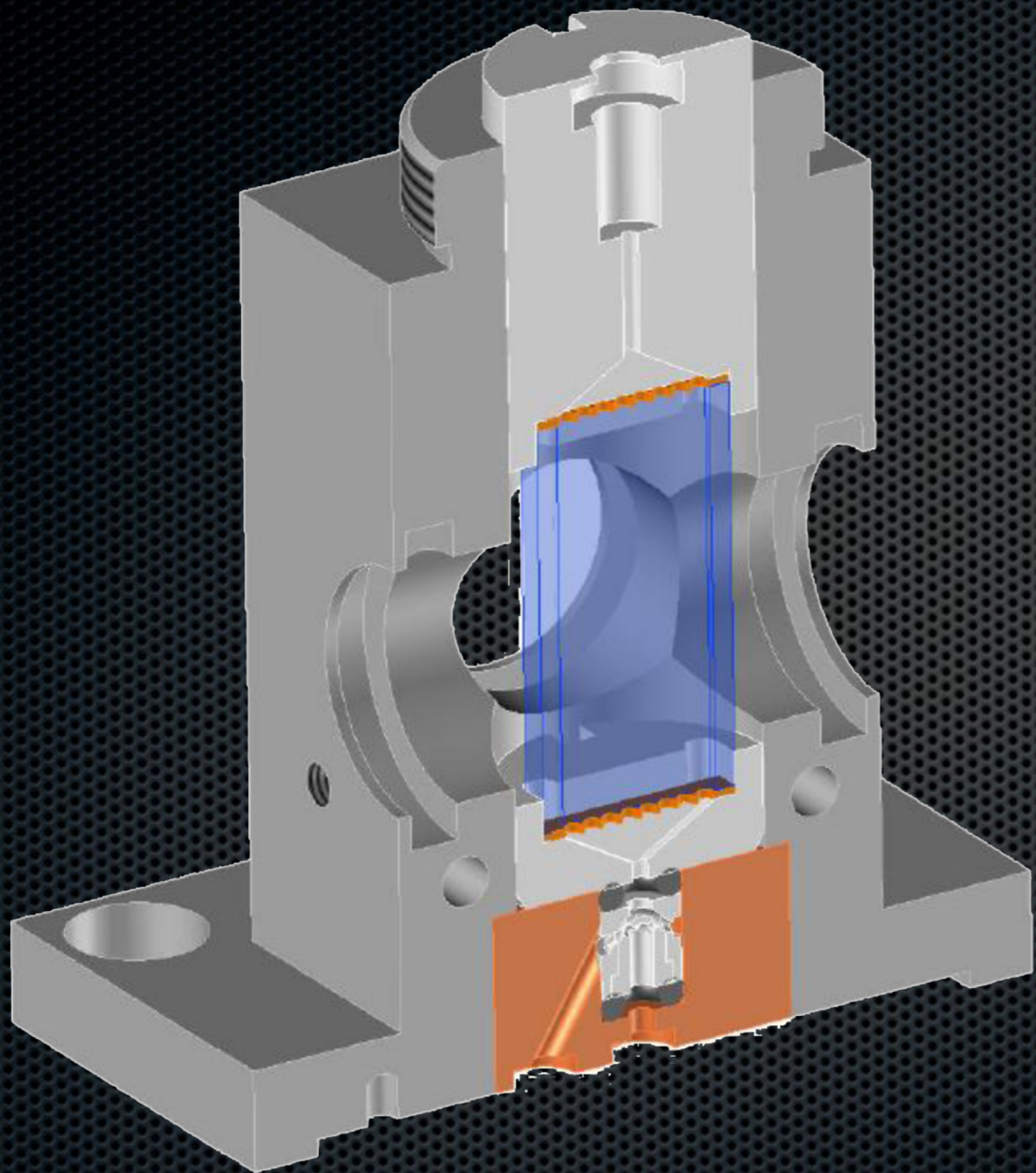


SBM-JRA Meeting

Stopped-Flow Chamber

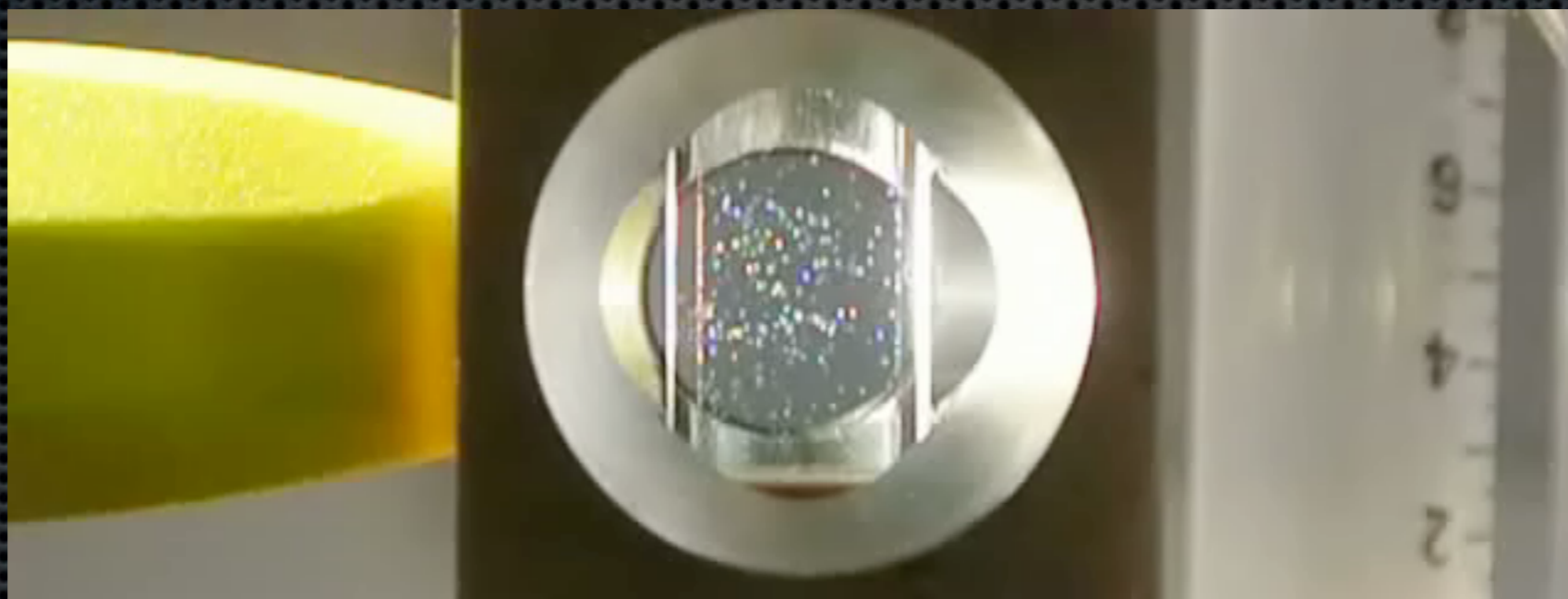
Stop-Flow for SANS

- ✦ Today on D11, D22 and D33:
 - ✦ $10 \times 25 \times 1 \text{ mm}^3$ Hellma cells i.e. $250 \mu\text{L}$,
 - ✦ Typical counting time of a few minutes,
 - ✦ Sample replaced in 50-200 ms with 600-800 μL ,
 - ✦ Measurements repeated until sufficient statistics
- ✦ Goals: reduce wasted sample to minimise preparation time & costs, improve temperature stability (0.1 K), allow temperature steps.



Observation Head Design ?

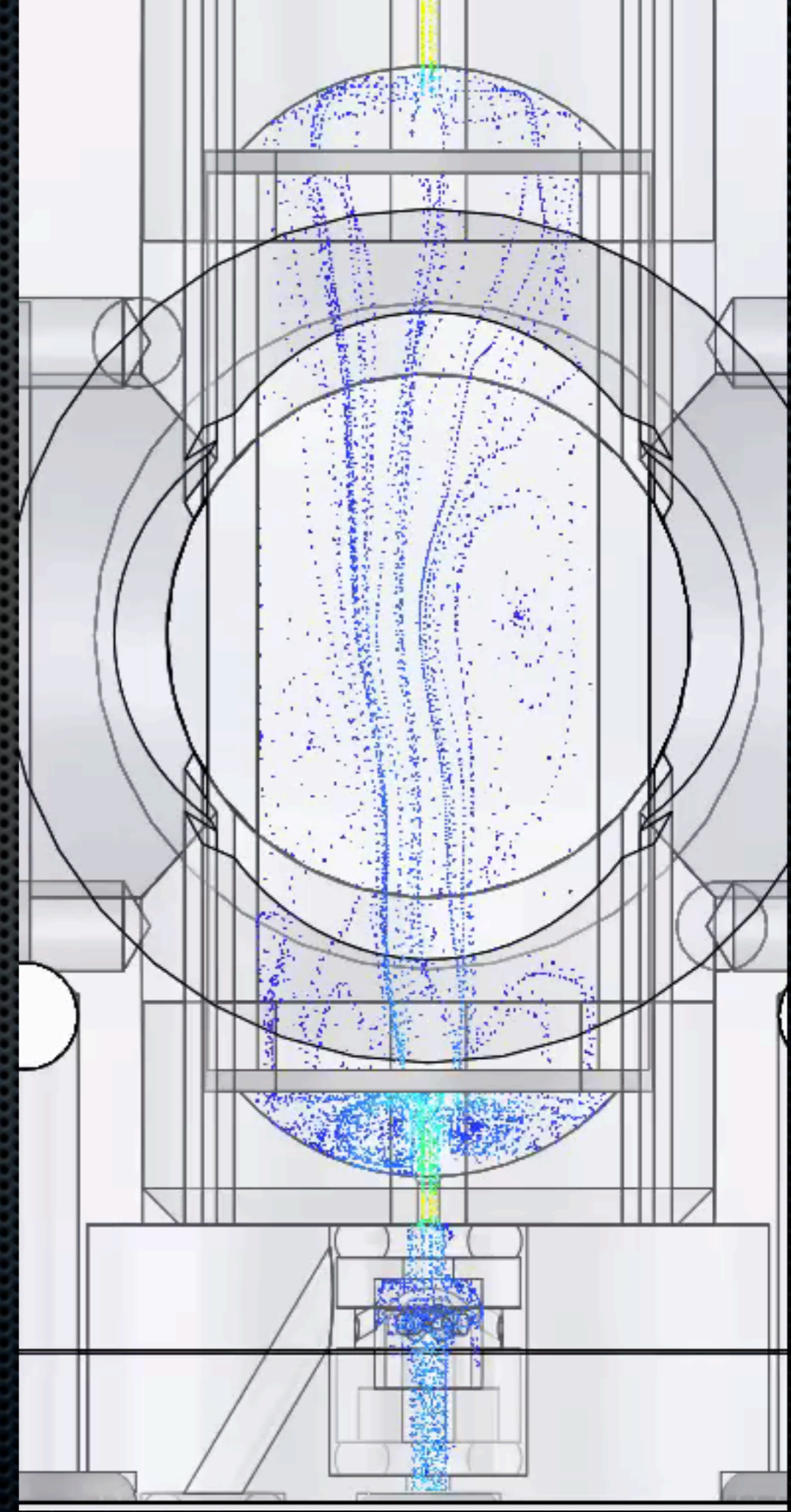
503 μL injected at 1 mL/s

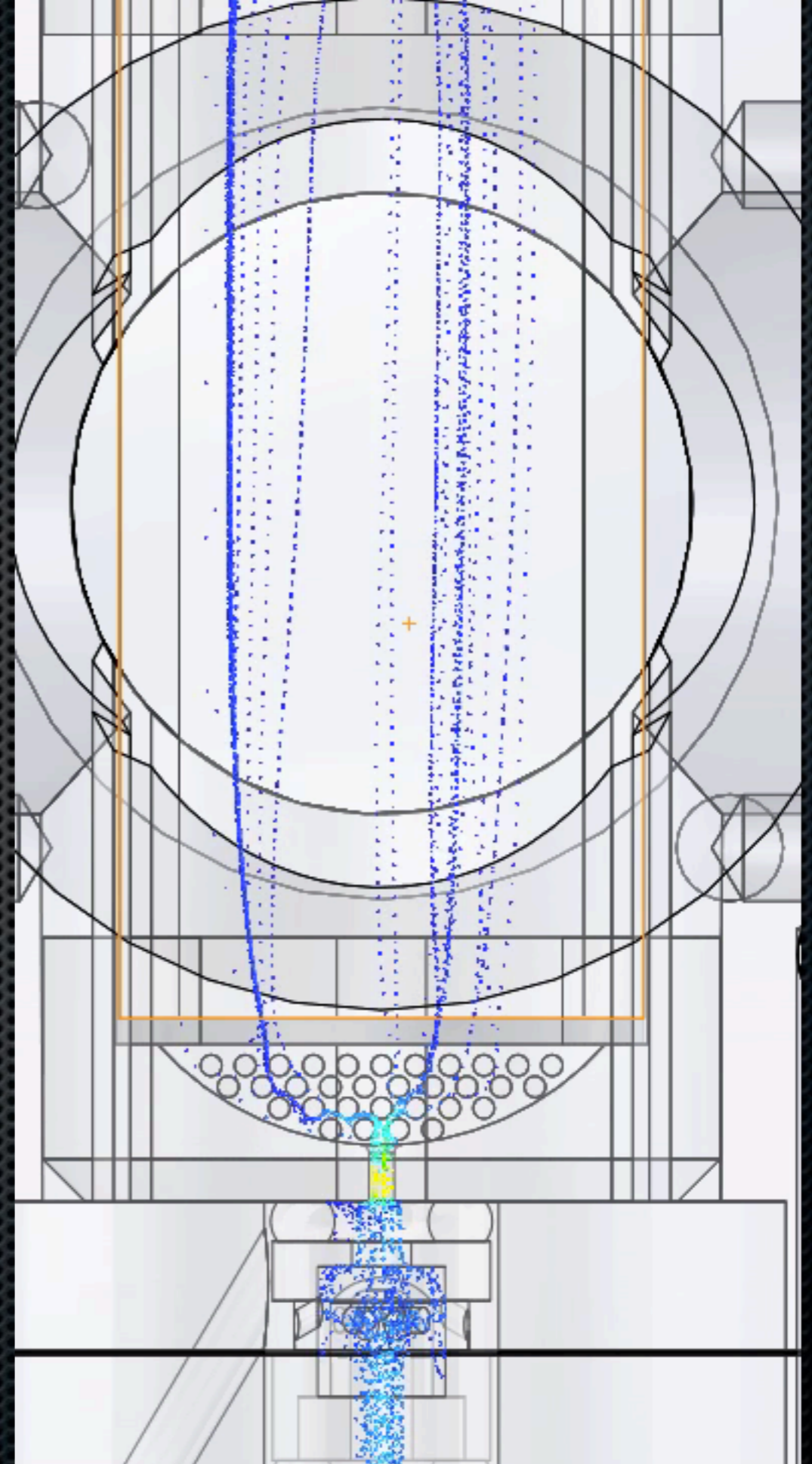
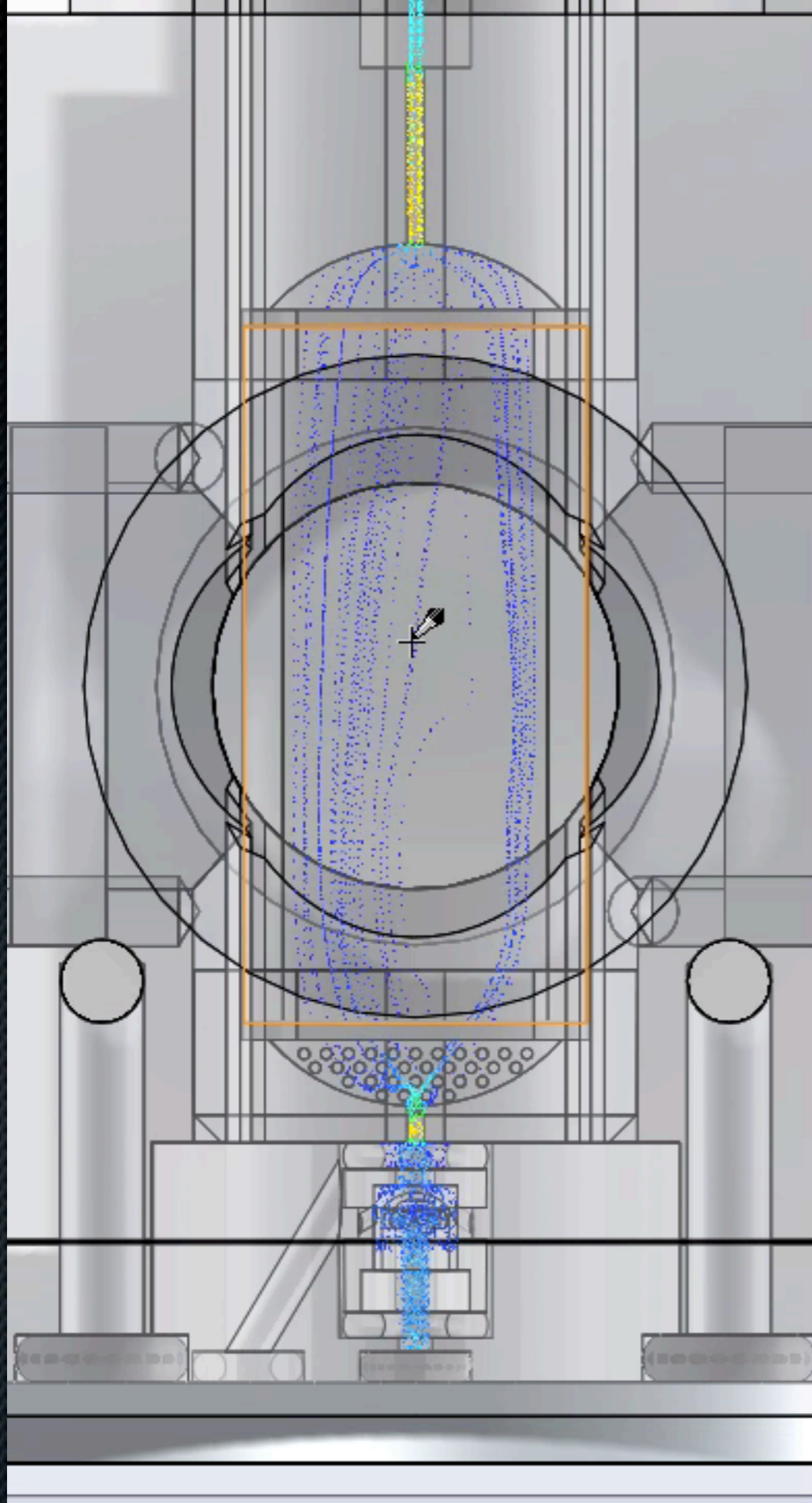


x40 real time

Observation Heads Design ?

- ✦ Actual chamber:
 - ✦ Non-homogeneous sample change with standard seal
 - ✦ Better with seal made of holes but still difficult to replace the sample
 - ✦ x3 cell volume required
 - ✦ Simulations reveal vortices

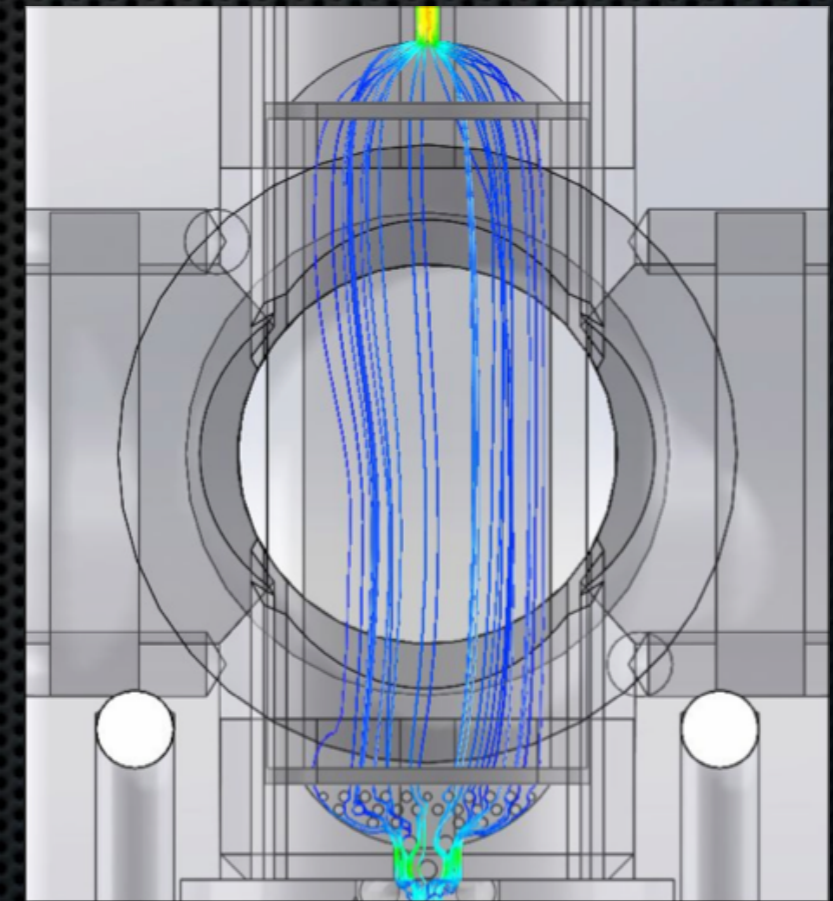
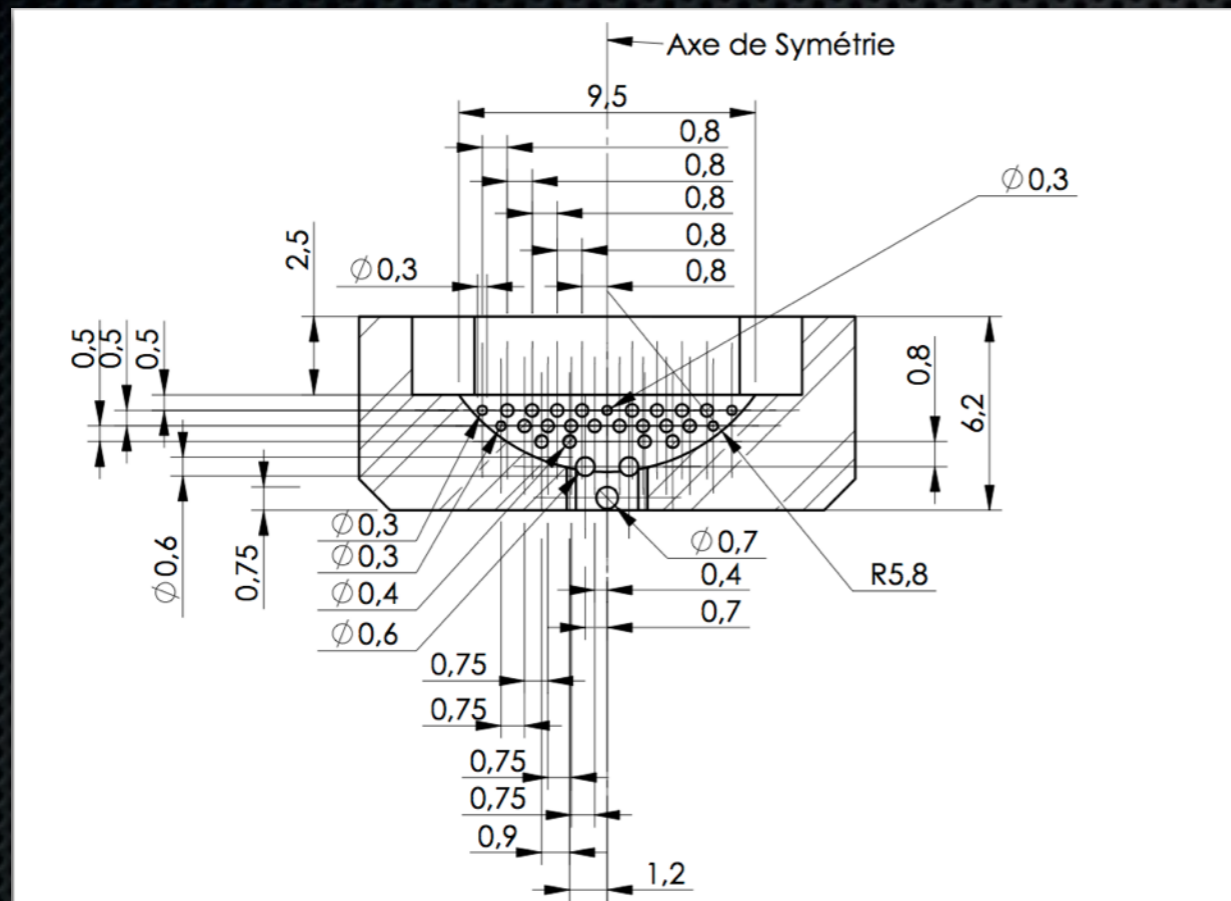




What's up today ?

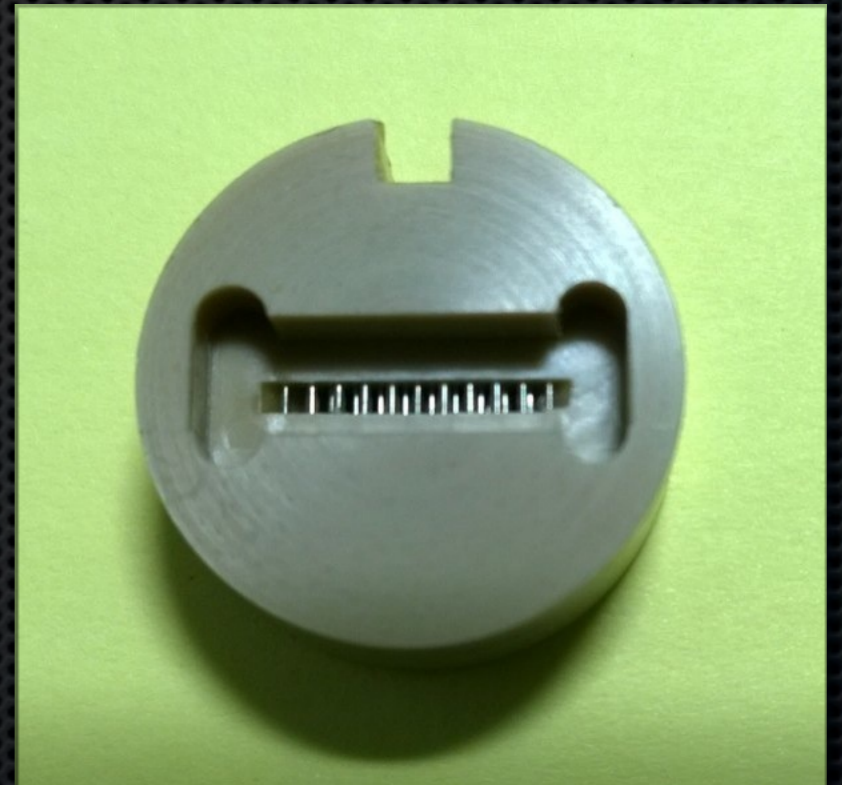
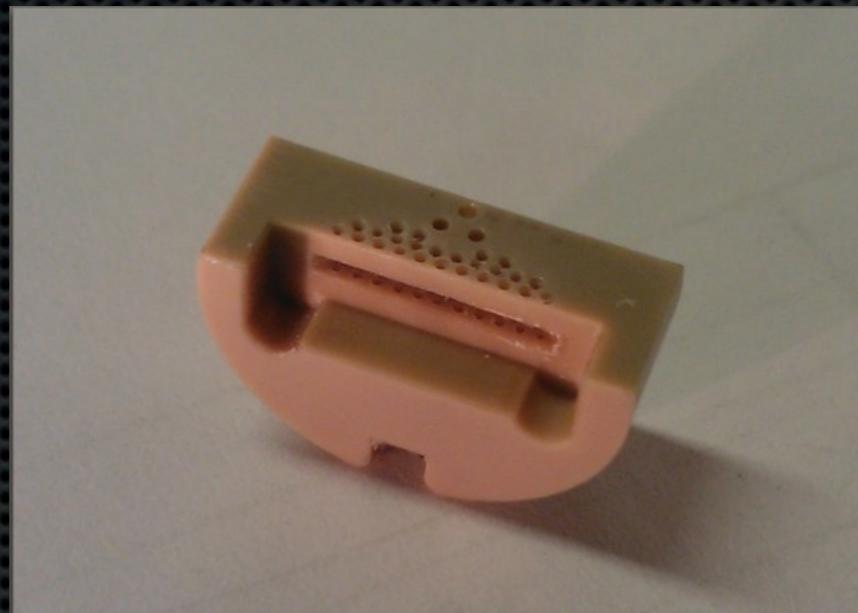
- ✦ Novel damping grid designed towards laminar flow
 - ✦ Simulations, final drawings completed at ILL
 - ✦ Construction performed at ISIS
 - ✦ Novel damping grid tested successfully at ILL
- ✦ New temperature-controlled chamber on tracks...
 - ✦ Conceptual design, compromises, opportunities
 - ✦ Your feedback...?

Design and simulations...



Towards a laminar flow...
determination of number & sizes of rods
of a damping grid

In the real world...



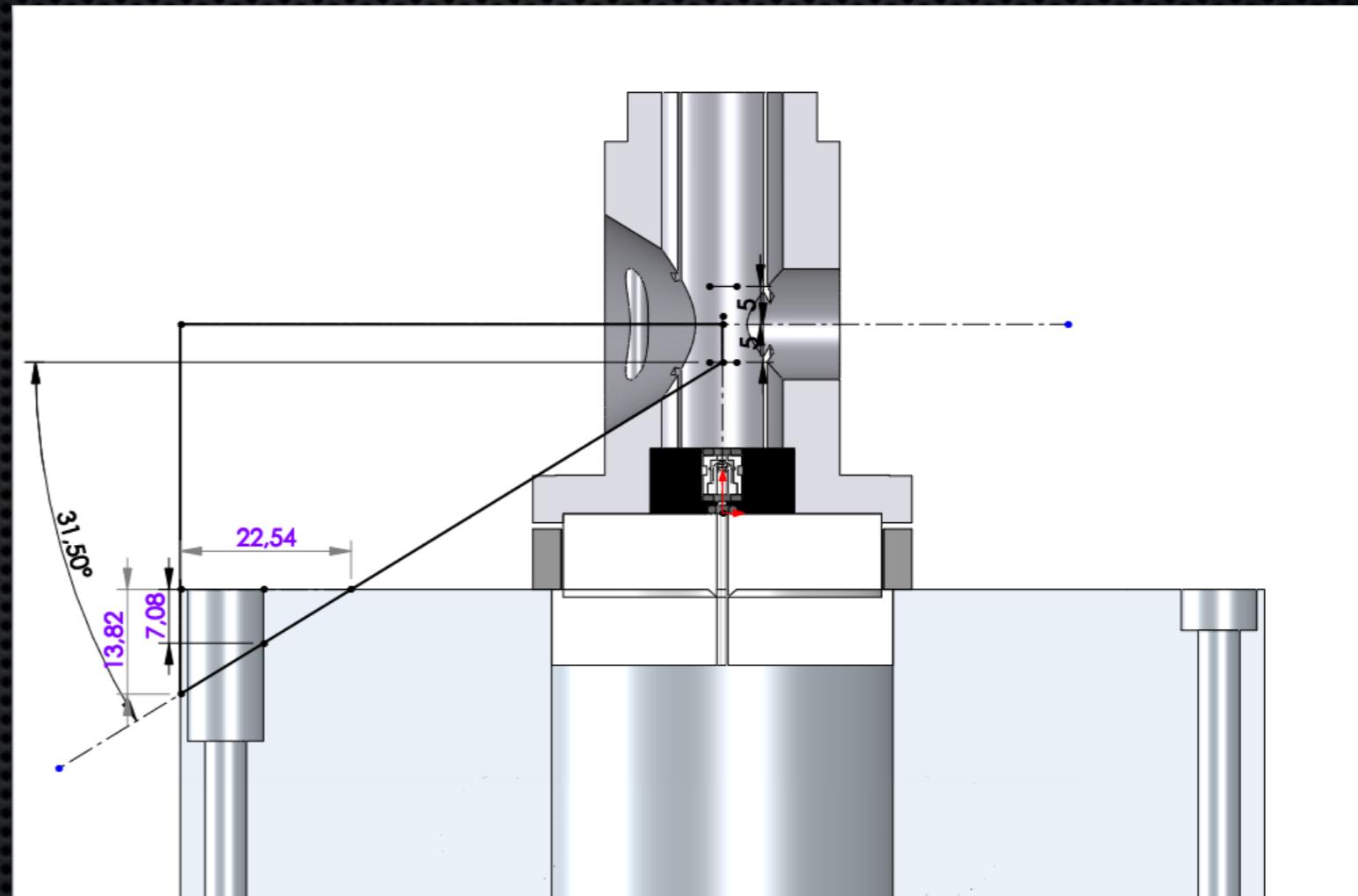
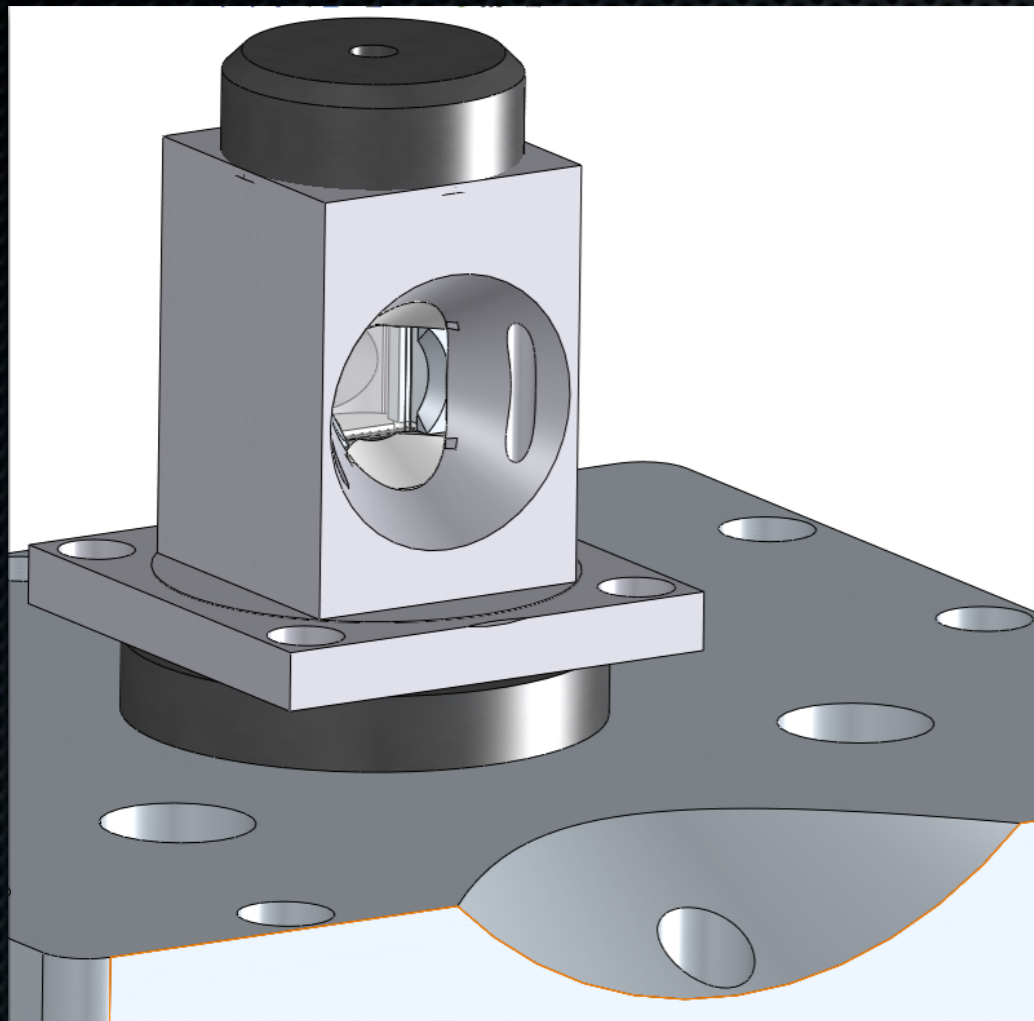
Many thanks to Andy, Colin, Oleg *et al.* (ISIS)
for their great help !

Comparative video...

Drilled seal vs drilled seal & damping grid

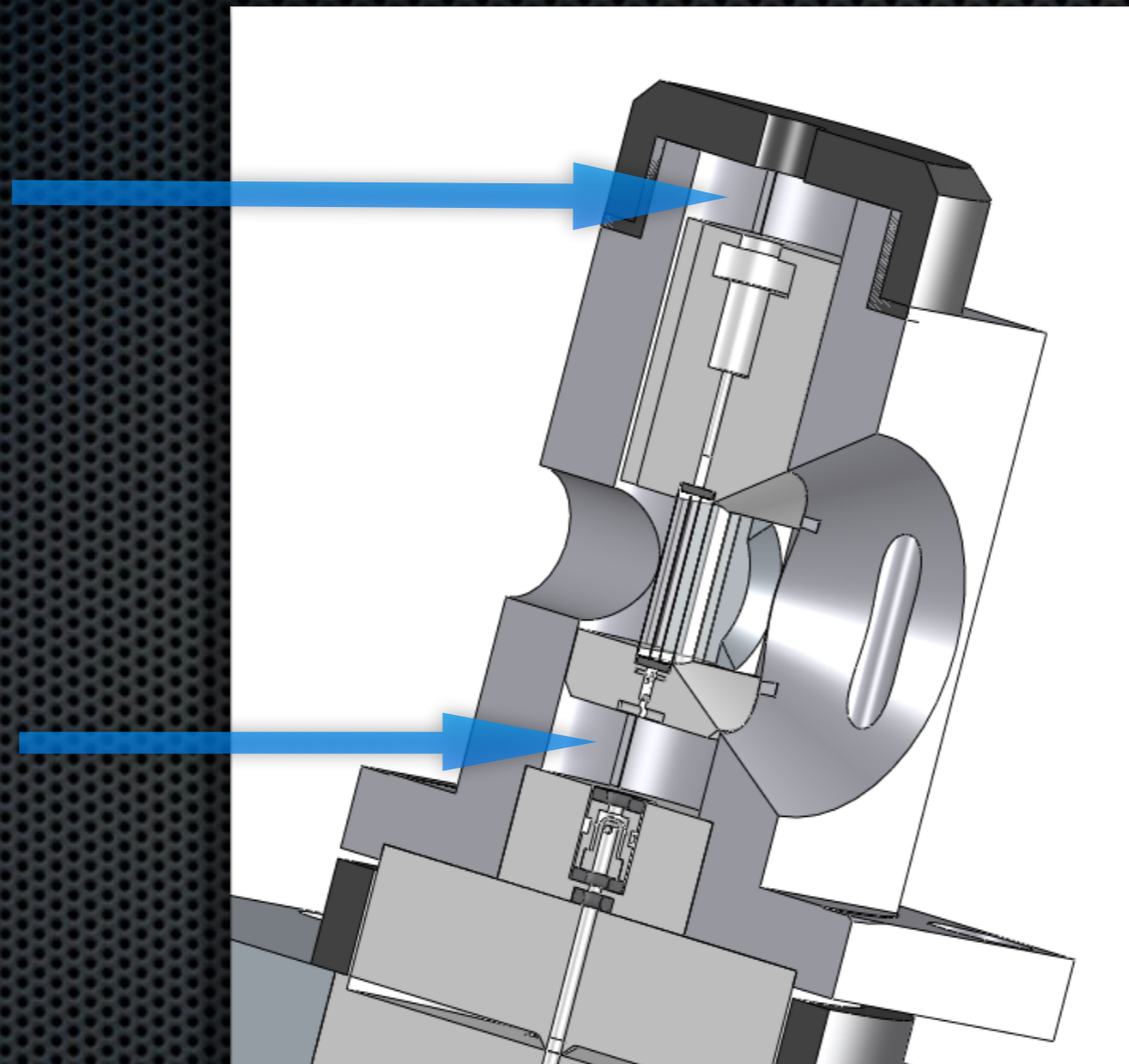
Old design

Conceptual design & limits



Difficult to provide the maximum scattering angle

Opportunities...



New parts or additional parts ?

To be continued...

