NSE pressure cell

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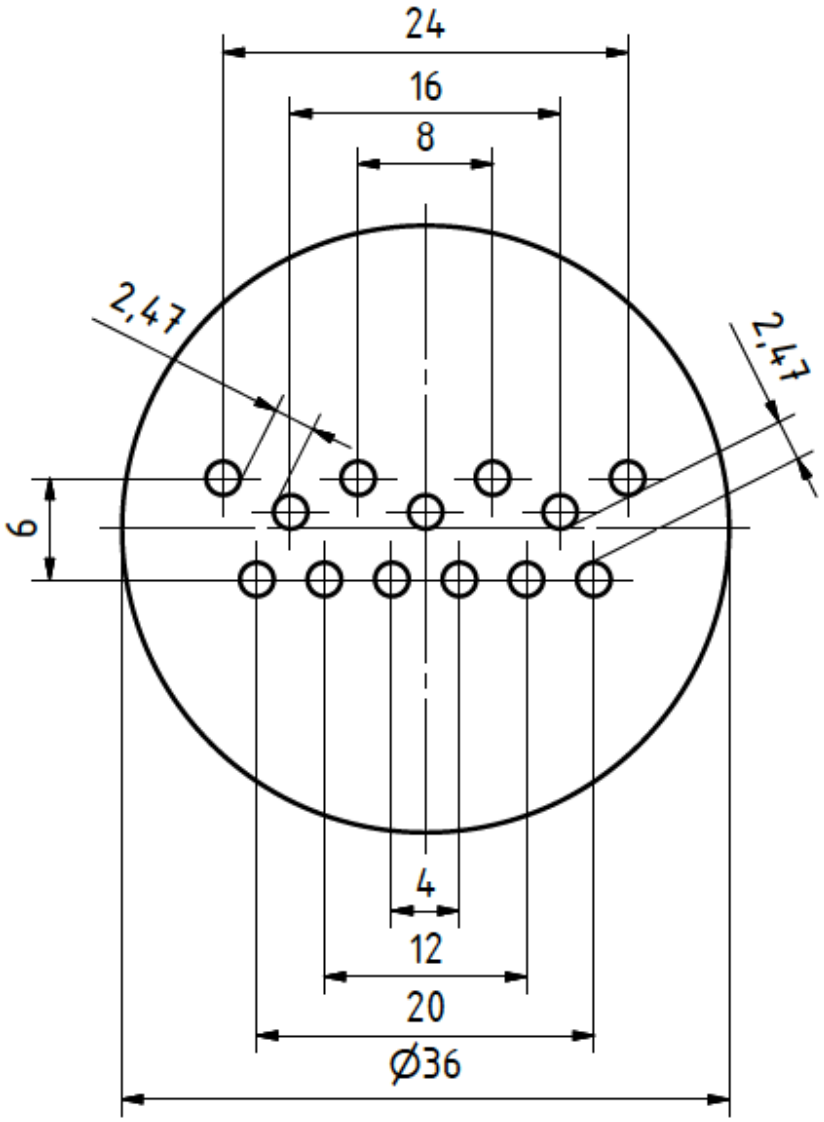
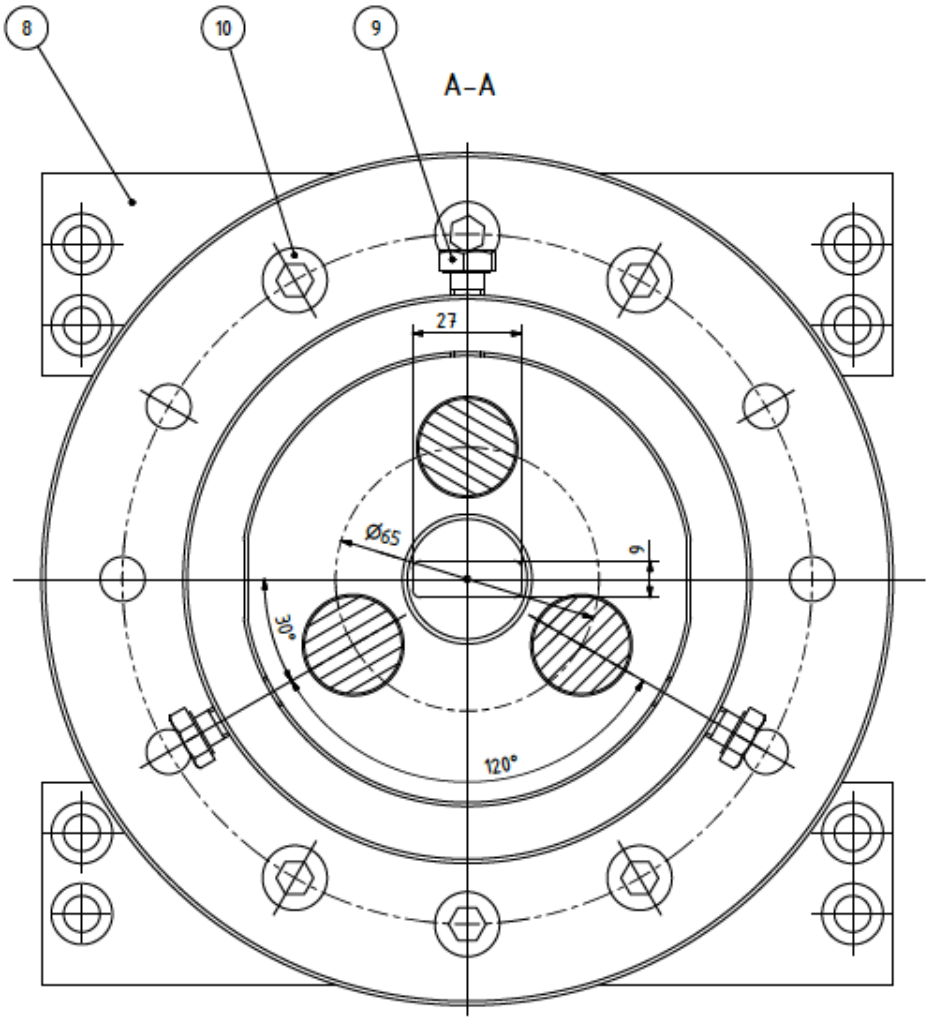
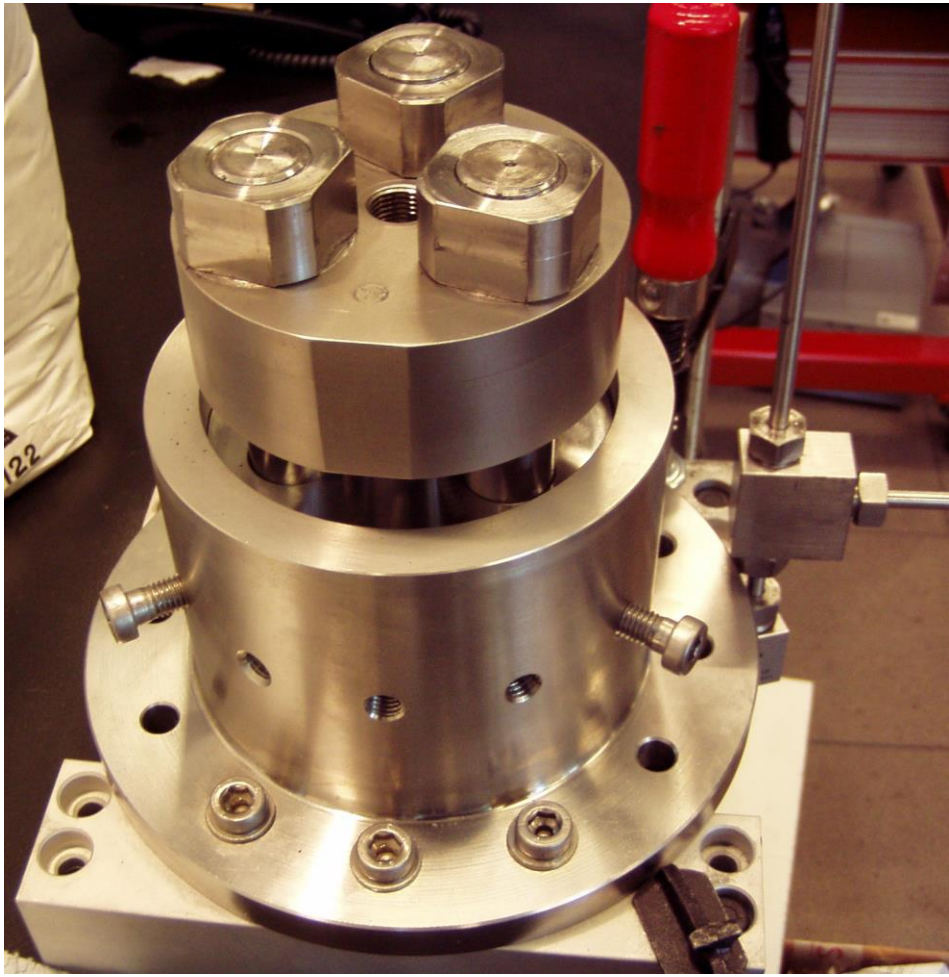
Cell #1



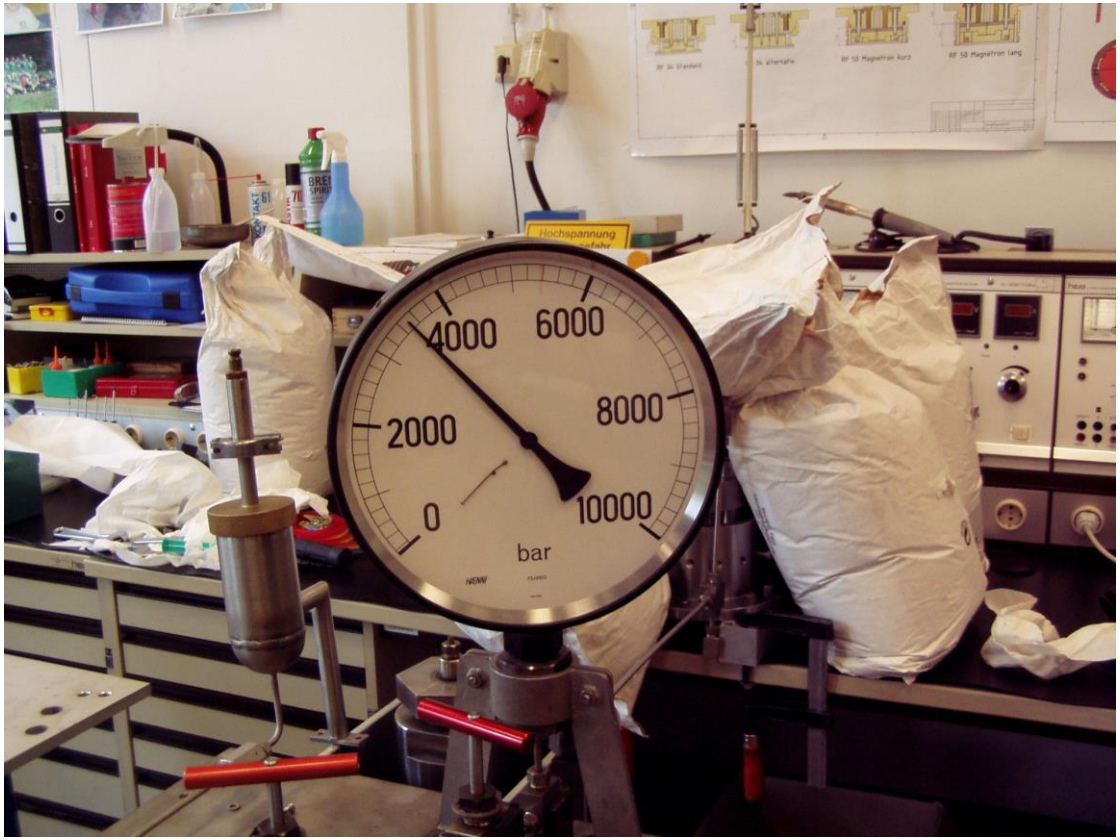
TiZr

Cell #1



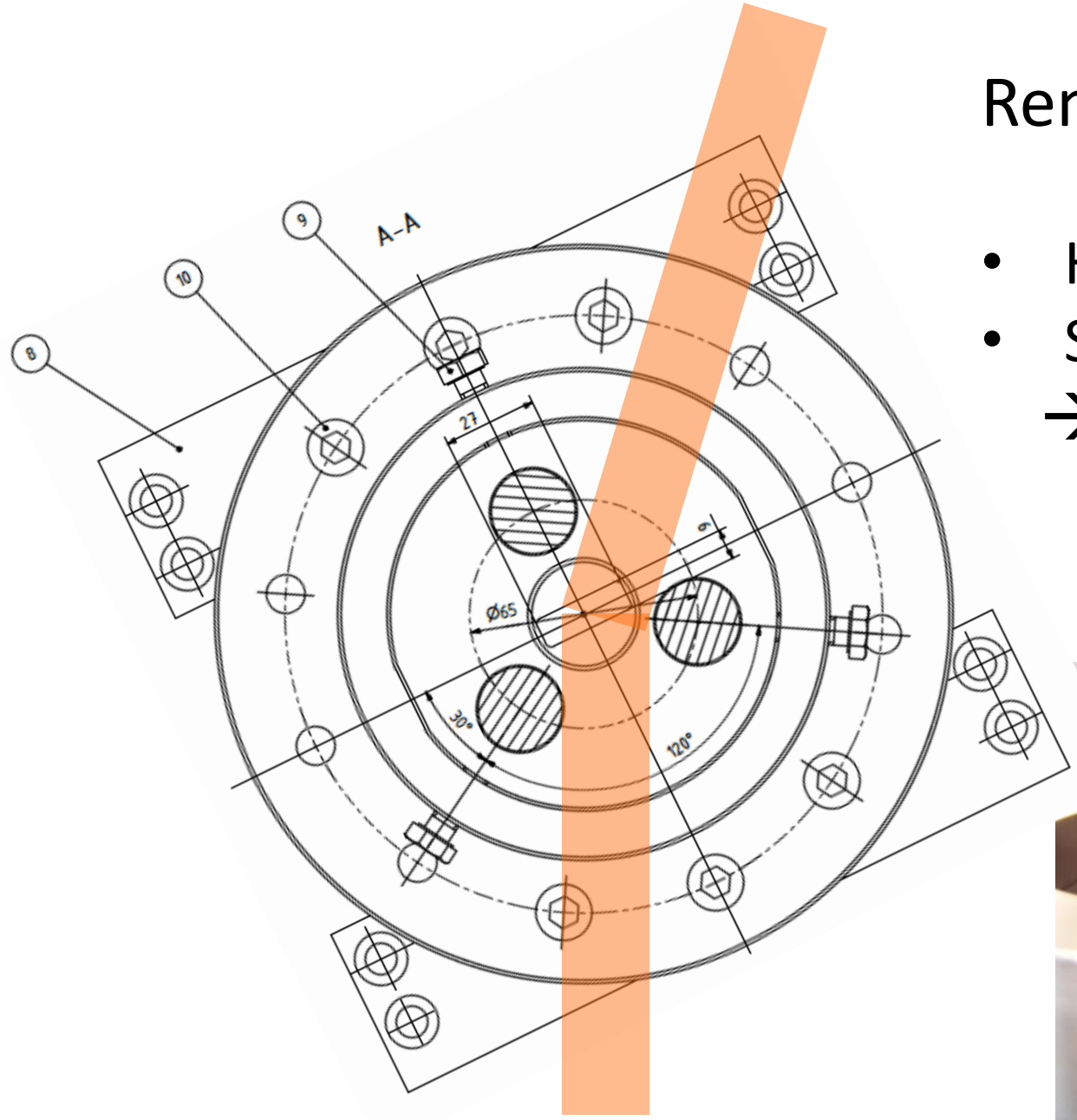


Cell #1 --- Testing Pressure 3.5 kbar



→ operation at 2.4 kbar

Cell #1 --- Scattering Geometry



Remaining: Test

- How easy to fill ?
- Signal/Background

→ typically Q > 0.08A^{-1}

New NSE Pressure Cell

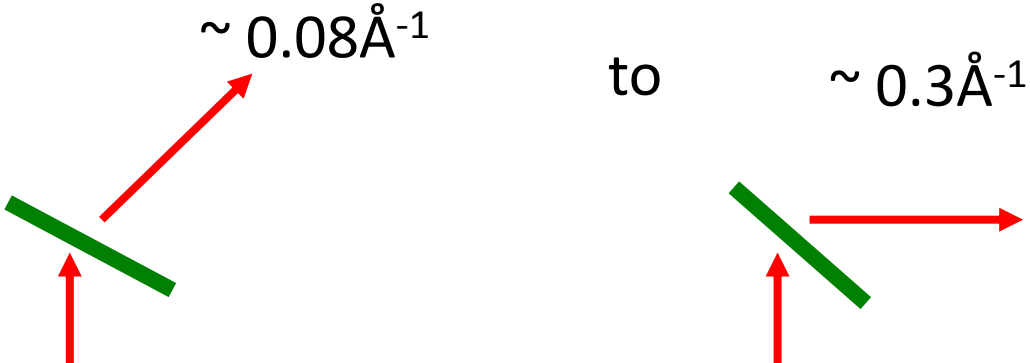
(workshop Ismaning, Nov `14)

Science Case:

Classical Soft Matter
Strong/medium scattering
0 .. 2 kbar
(TiZr)

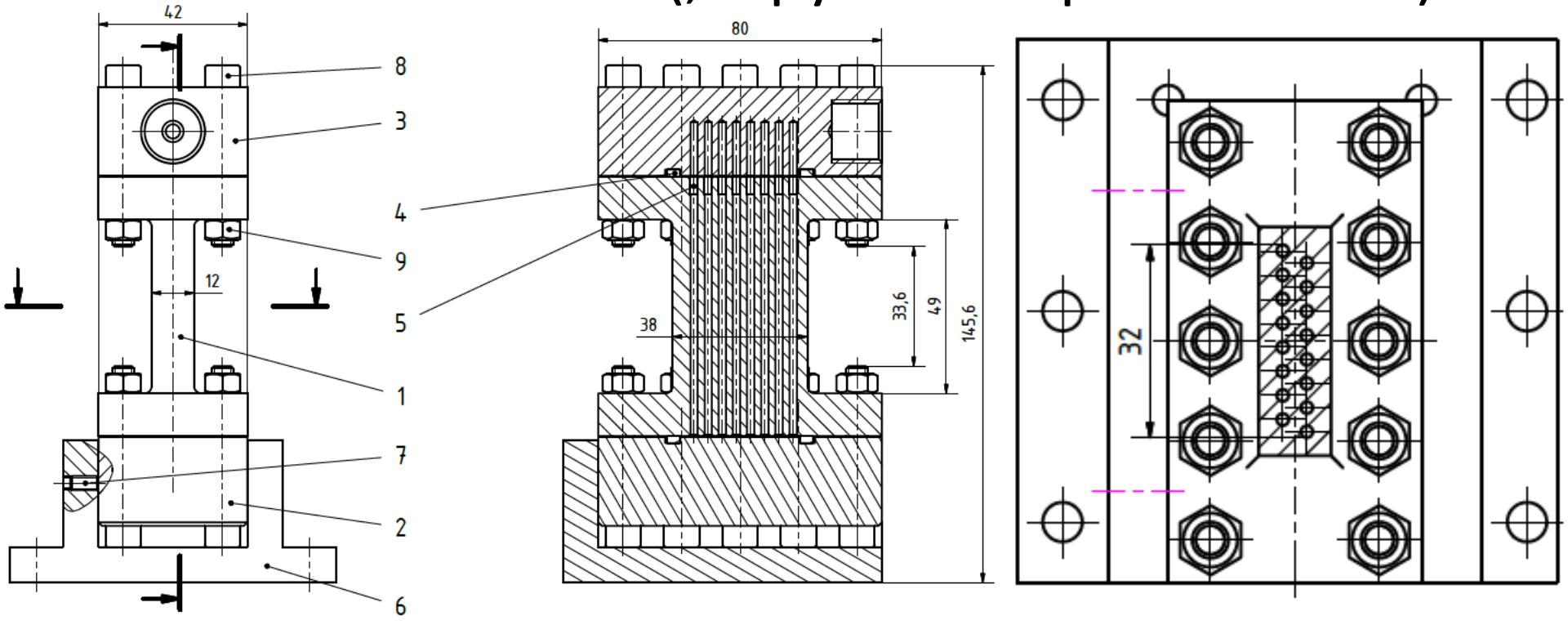
Protein Denaturation
Weak scattering
2 .. 5 (7) kbar
(sapphire)

Geometry:

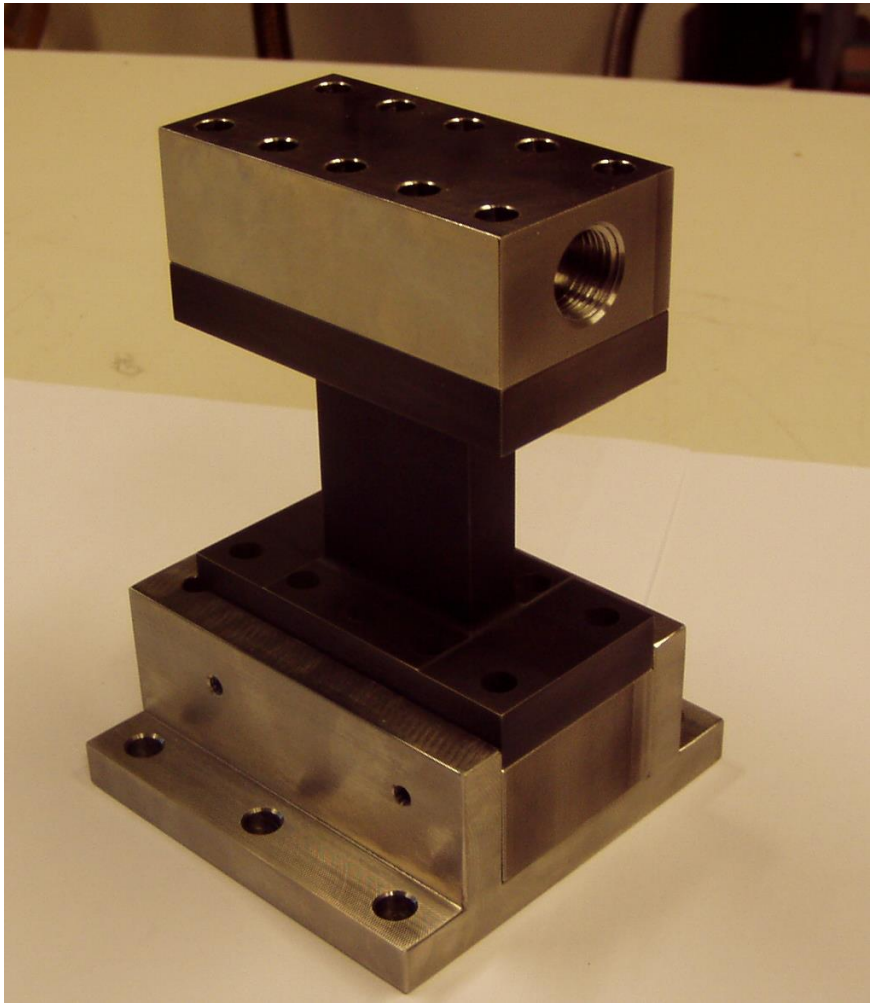


- Thermalization: -10° .. +100°C (isolation)
- Separators: sample/hydraulic liquid
- Maximize sample area
- More complex compound cell (Al/TiZr)...???

The cell from JCNS (‚copy‘ of ISIS pressure cell):



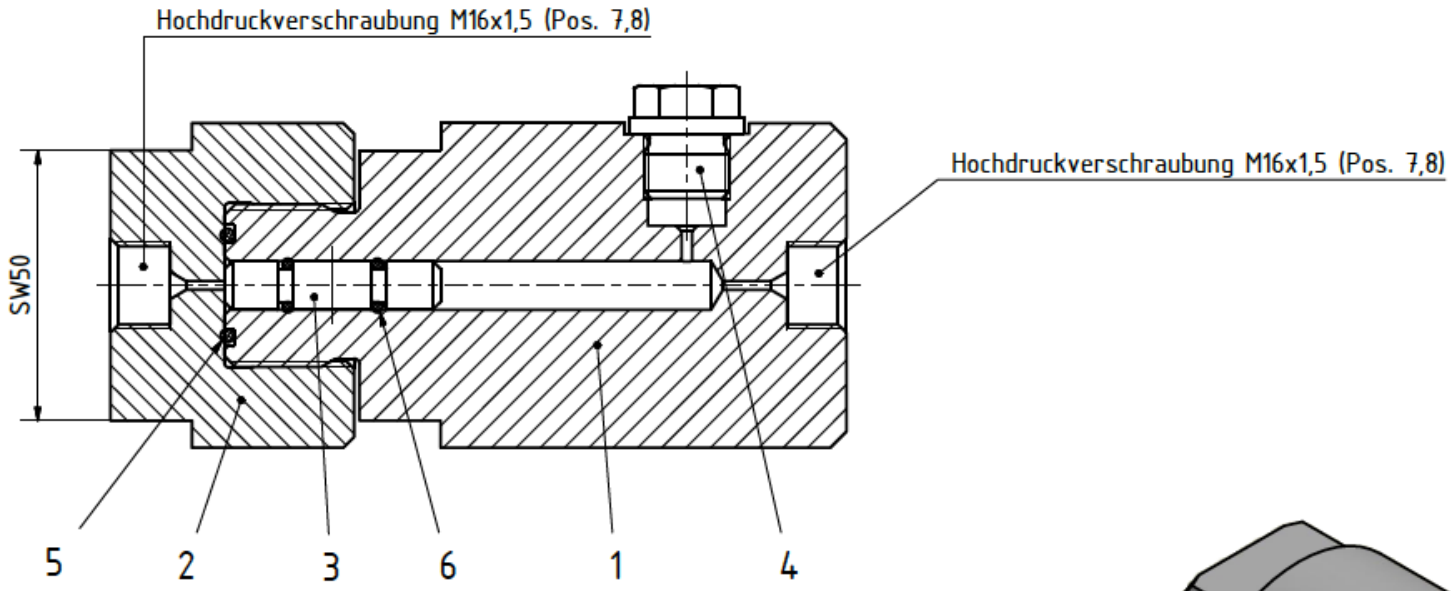
The design so far

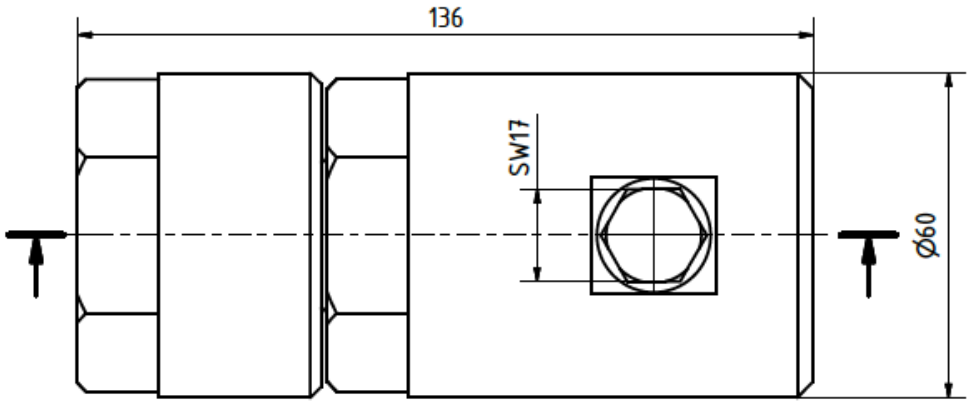


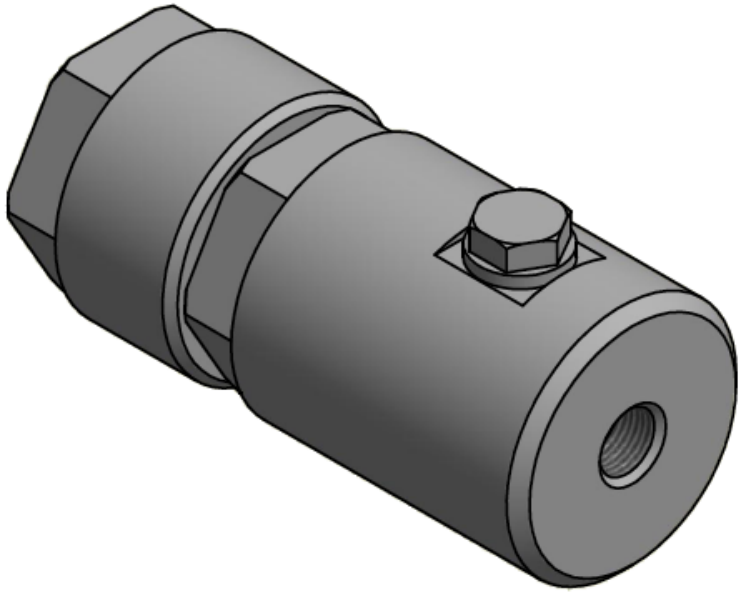
Seal: Perbunan (rubber)
Pressure max. 2.5 kbar

Seal: Copper
Pressure max. 7.0 kbar
(operation: 5.6 kbar)

Separator


Hochdruckverschraubung M16x1,5 (Pos. 7,8)
Hochdruckverschraubung M16x1,5 (Pos. 7,8)
SW50
5
2
3
6
1
4


136
SW17
Ø60



Next Steps

- Mount on SANS: background, pressure tests
- Mount on NSE: tests of spectra

Suggested sample: droplet μE (results predictable)
Sample no. 2: lysozyme (globular)

- Separator test
- Thermalization construction / testing

Thanks !