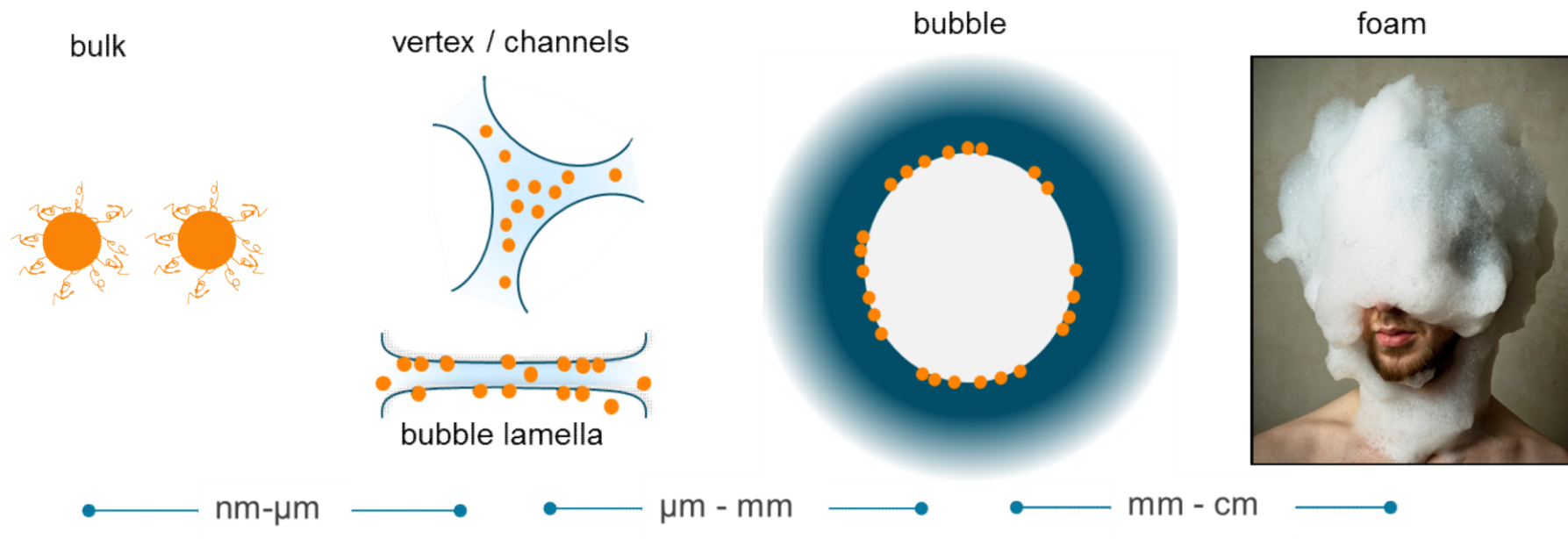


flexiprob: SANS at foams

Matthias Kühnhammer and Regine von Klitzing



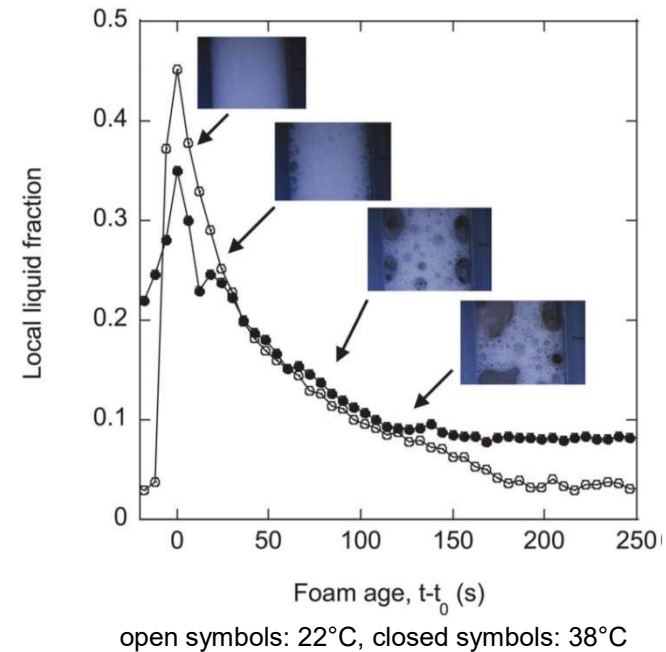
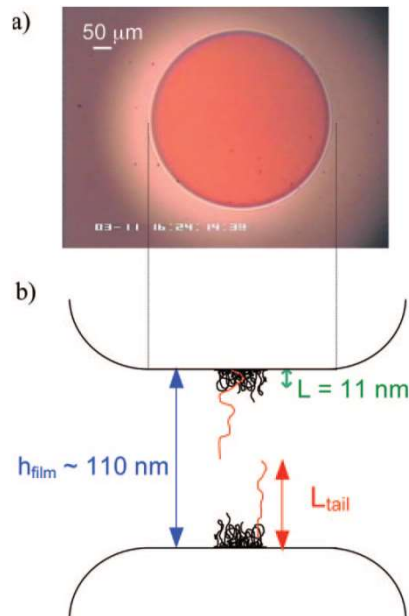
Foam structure at different length scales



Pickering foams stabilised by solid particles:

- Silica particles
- Proteins
- Microgels ?

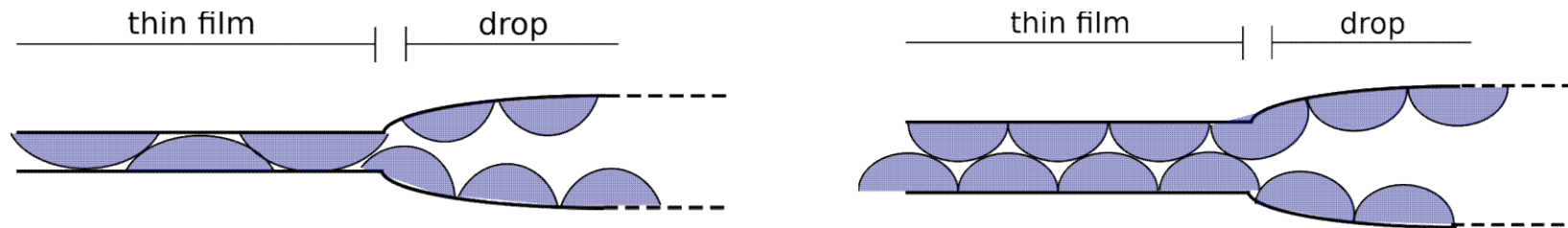
Linear PNiPAM



- Thin Films stabilised by „dangling“ polymer chains
- For $T < \text{LCST}$ \rightarrow very stable and uniform films
- For $T > \text{LCST}$ \rightarrow films become unstable

- Macroscopic foams are not stable
- No noteworthy T-sensitivity

PNiPAM-Microgels



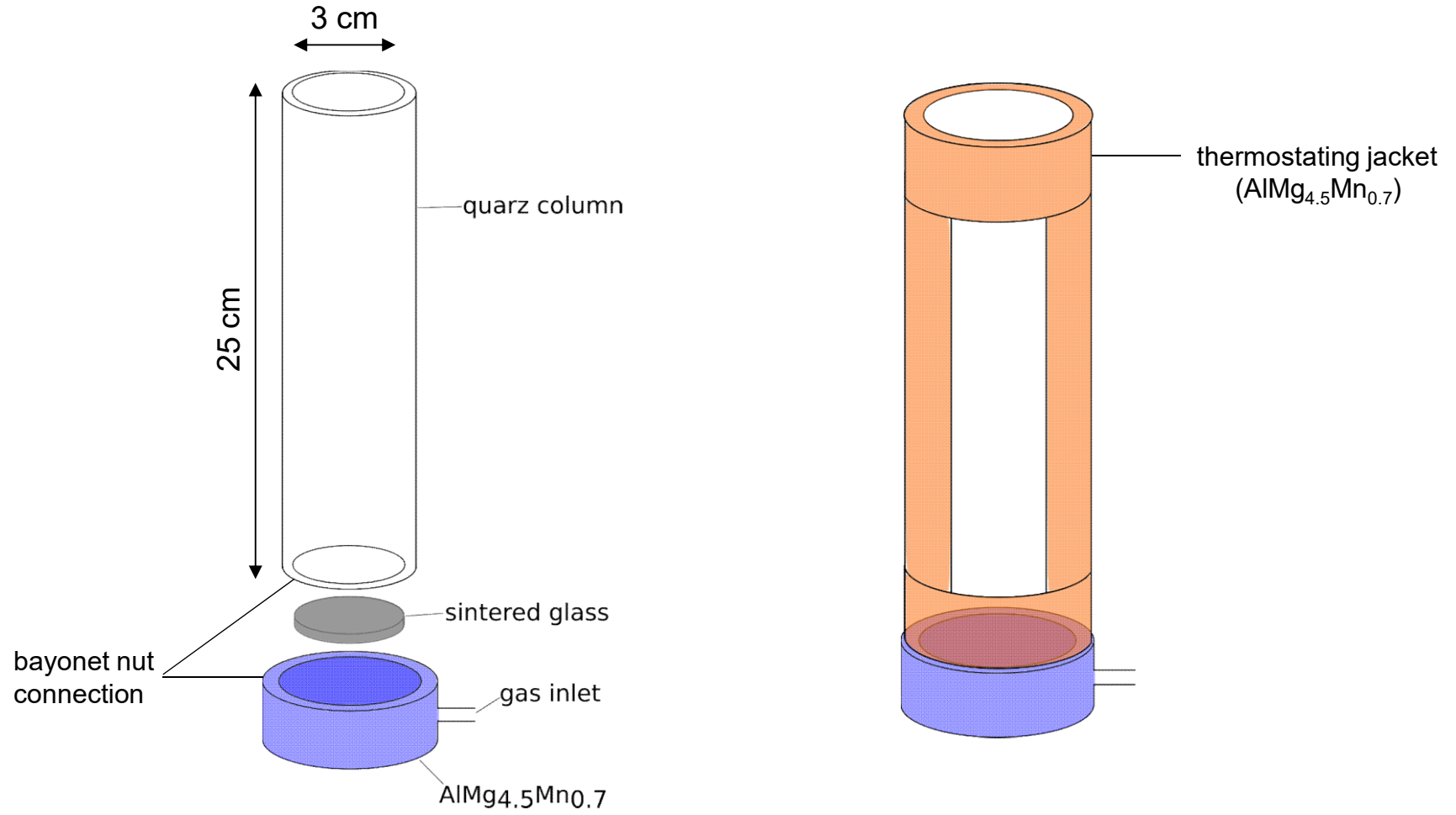
Two different structures in thin films:

- Bridged monolayers (unstable)
 - Bilayers (more stable)
- High $c(\text{Microgel})$ favours bilayer-formation

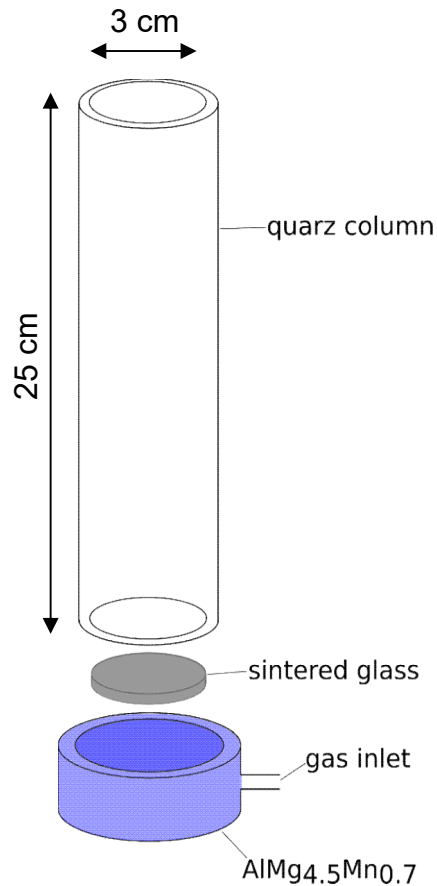
No studies on macroscopic foams (yet)

Construction of the foam cell

Foam Cell



Foam Cell



size of the foam column

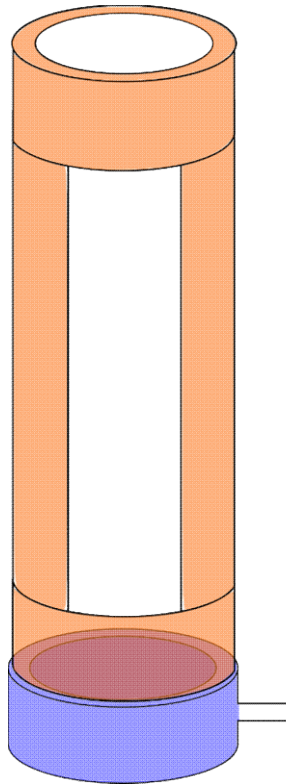
small Ø

- + small sample volume
 - + fast T-control
 - weak signals (bad S/N ratio)
 - boundary effects
 - low surface coverage with thermostating jacket
- (at constant beam slit size)

large Ø

- + better S/N ratio (esp. for dry foams)
- + higher surface coverage with thermostating jacket
- large sample volumes
- slow T-control

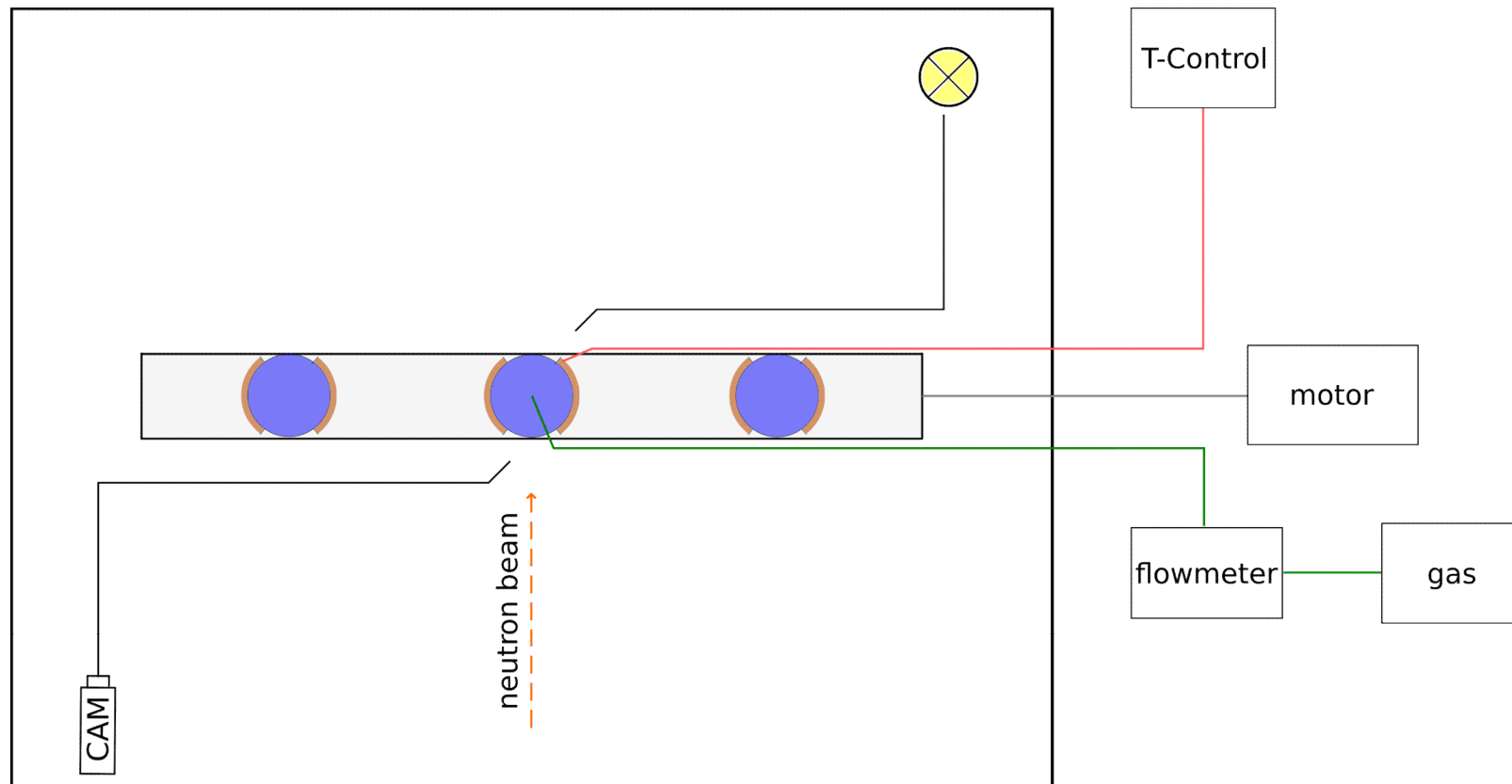
Foam Cell



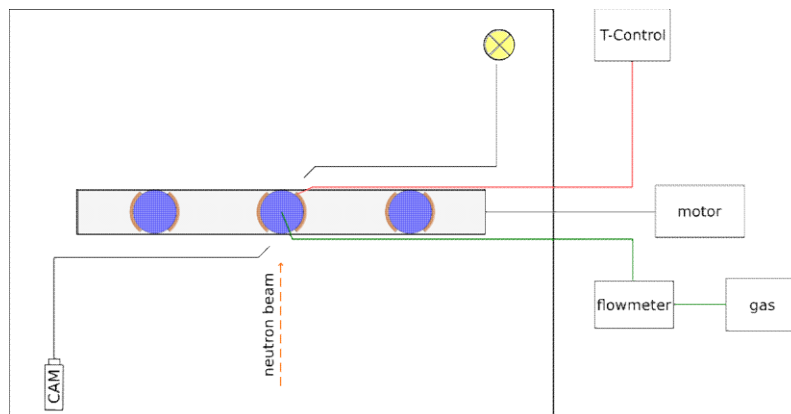
Open questions

- size of neutron window? (→ beam diameter?)
- fixation of breadboard on Al-pallet?
(constant beam \leftrightarrow cell orientation)
- sealing for thermostating jacket? (esp. material)

Periphery (Top View)



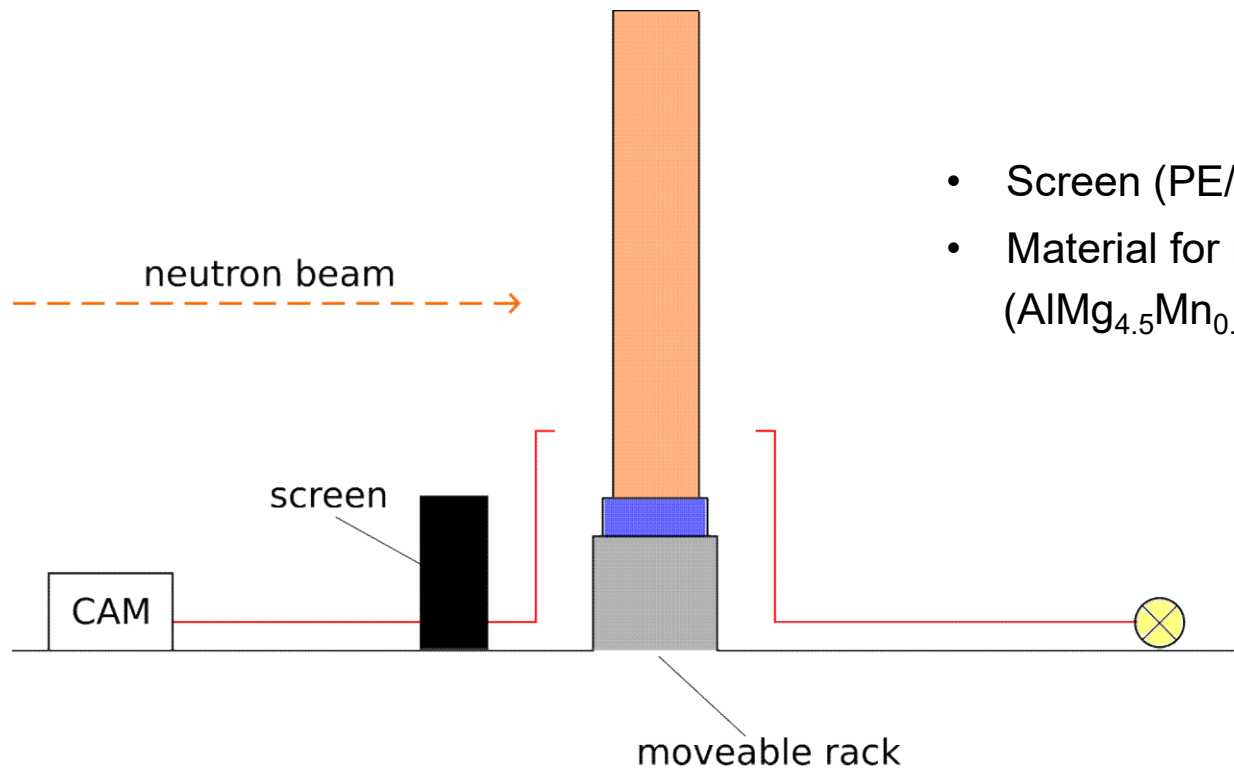
Periphery



- Optical breadboard (900x1200x59 mm, M6)
- Thermostat (Julabo FP50-HL)
- Flowmeter (Bronkhorst F-201CV)
- Connectors (Stäubli NCB – Clean-Break 316/316L)
- Camera
- Lamp
- Fiberscopes
- Motor

agreed – suggested – not decided

Side View



- Screen (PE/Bor-composite?)
- Material for rack?
(AlMg_{4.5}Mn_{0.7}? or enough screened?)