

# SBM-JRA Meeting

## Stop-Flow System

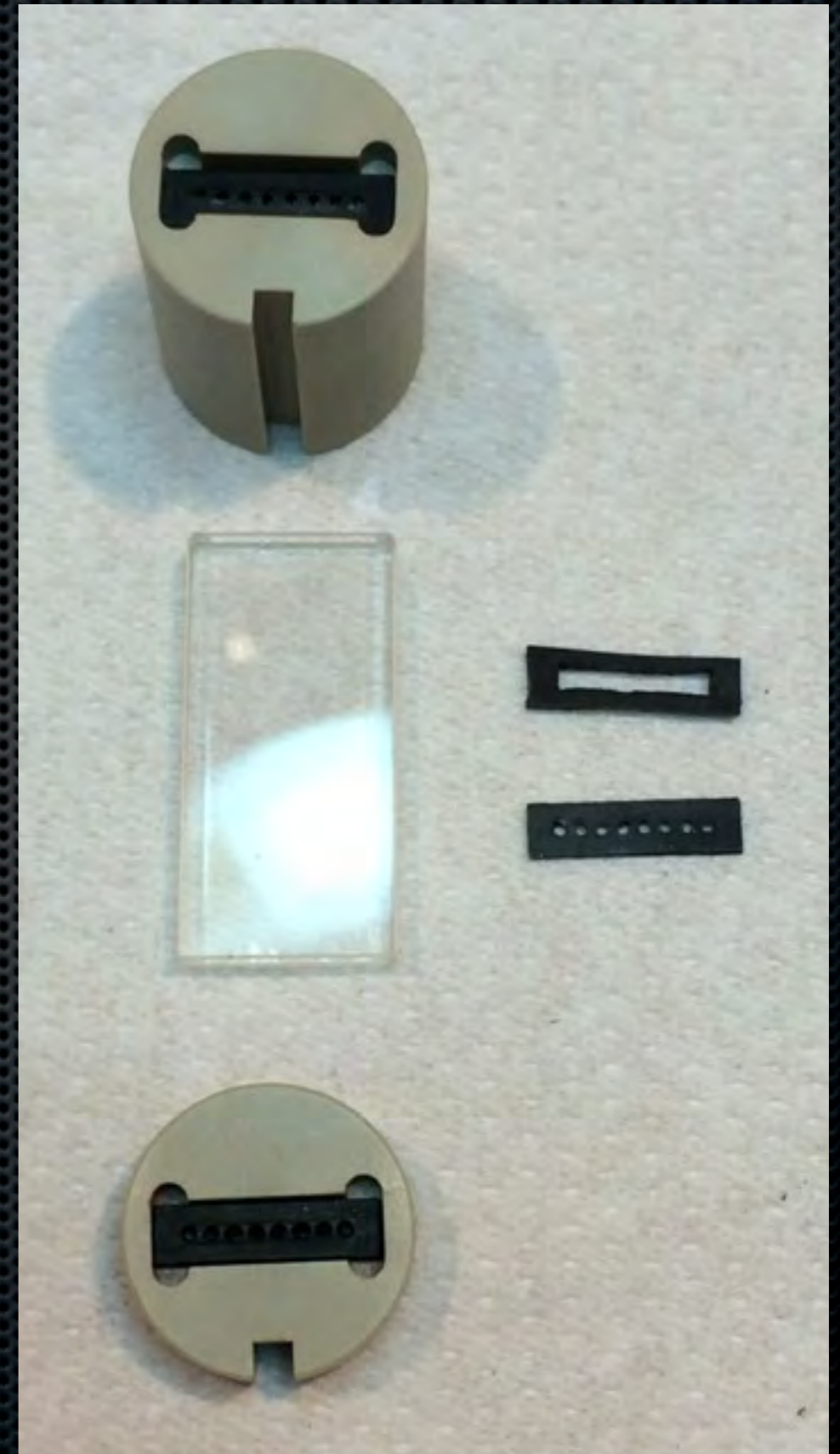
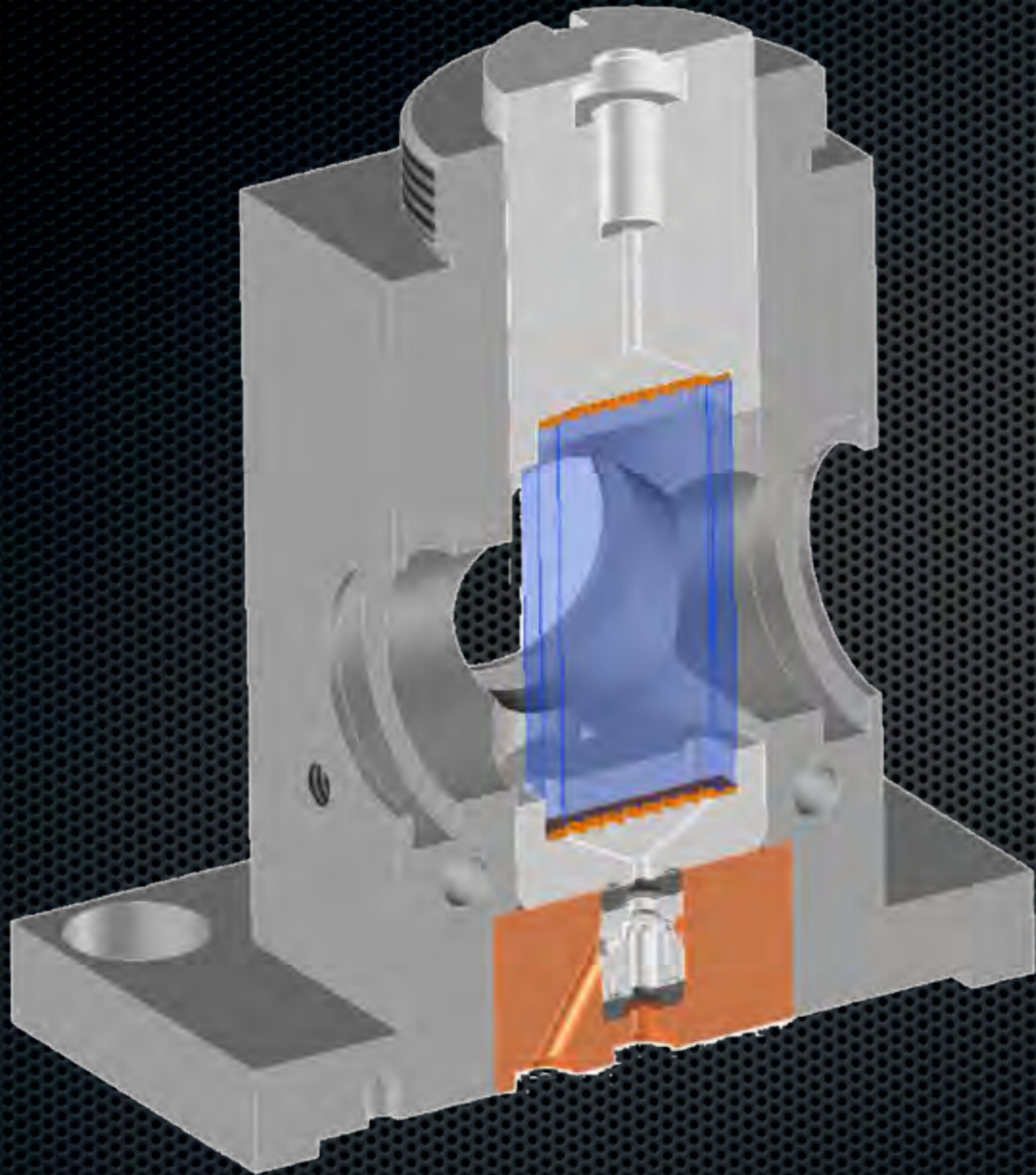
# Stop-Flow for SANS

- ✦ Today on 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  $\mu\text{L}$ ,
  - ✦ Measurements repeated until sufficient statistics
- ✦ Goals: reduce wasted sample to minimize preparation time & costs, improve temperature stability (0.1 K), allow temperature steps.



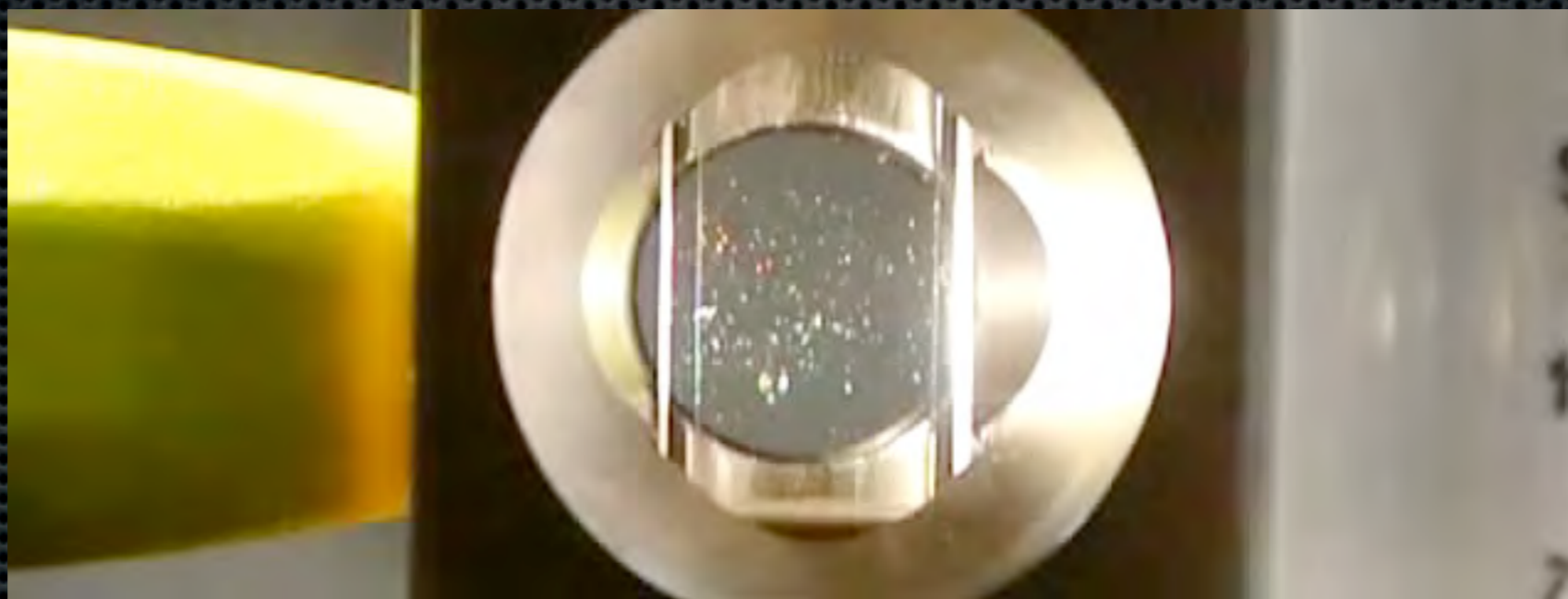






# Observation Head Design ?

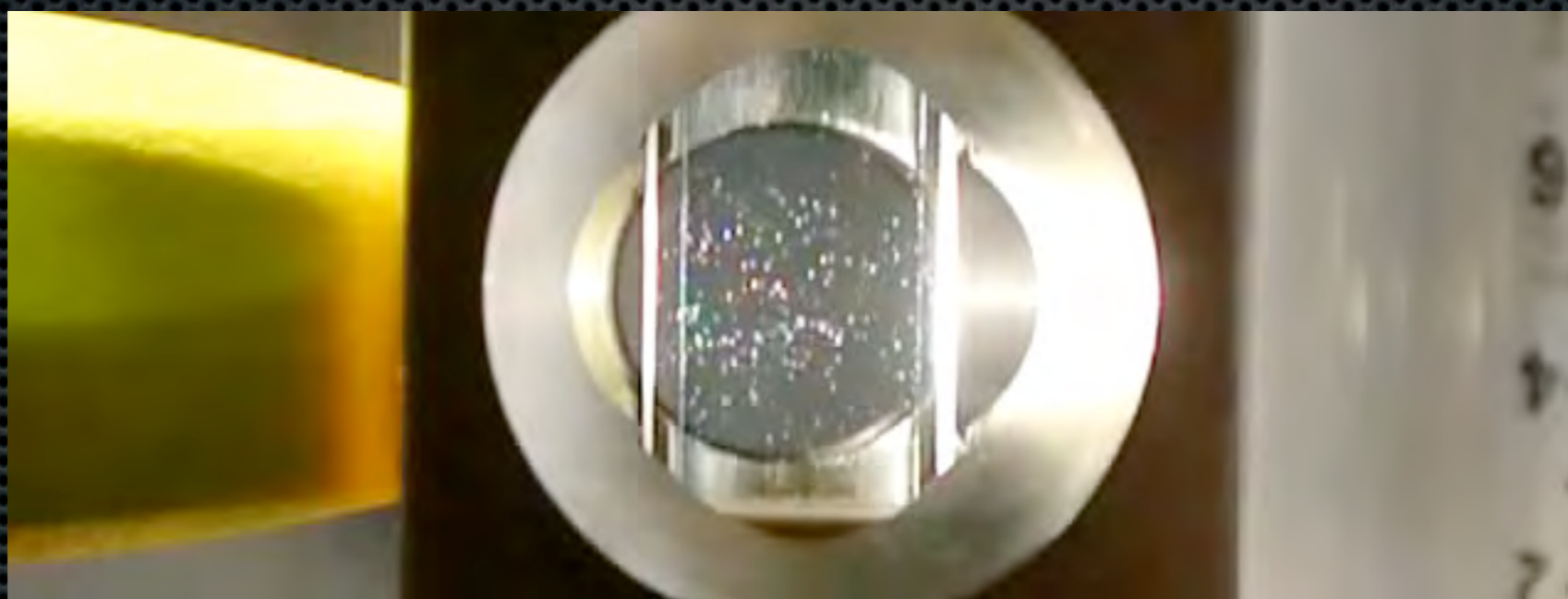
792  $\mu\text{L}$  injected at 2 mL/s



x40 real time

# Observation Head Design ?

792  $\mu\text{L}$  injected at 1 mL/s

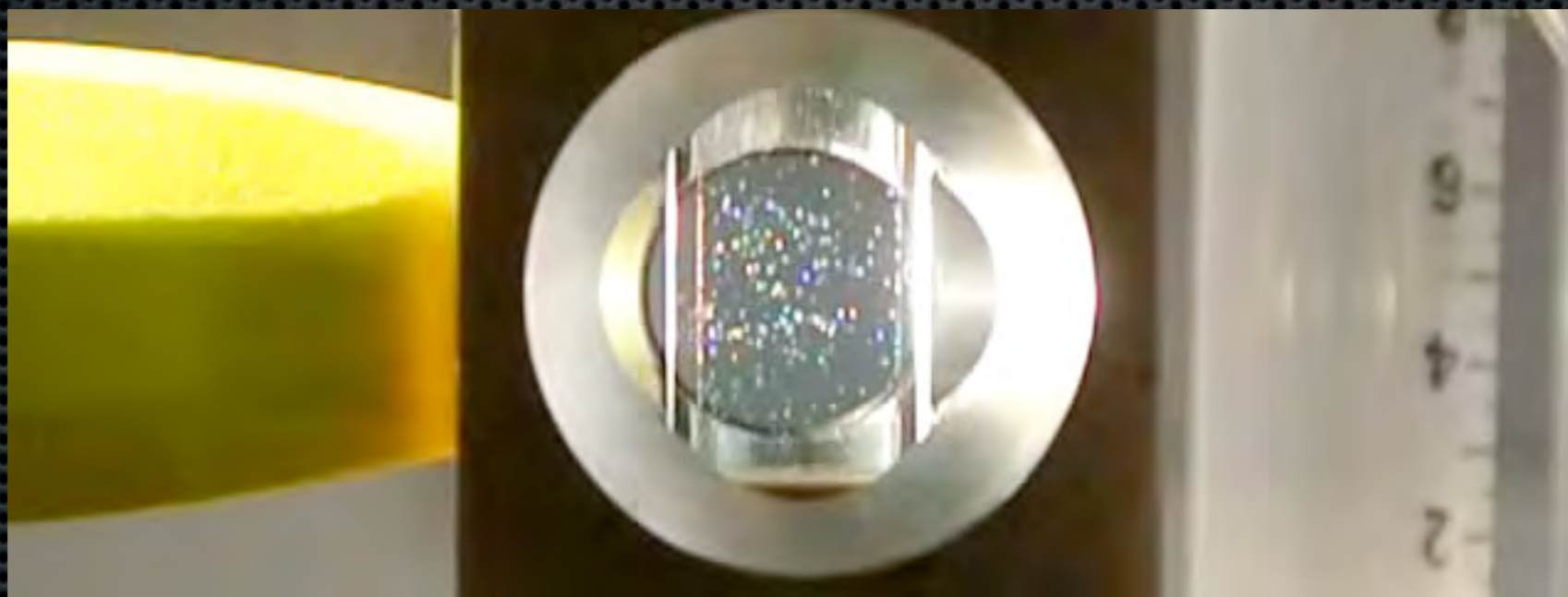


x40 real time



# Observation Head Design ?

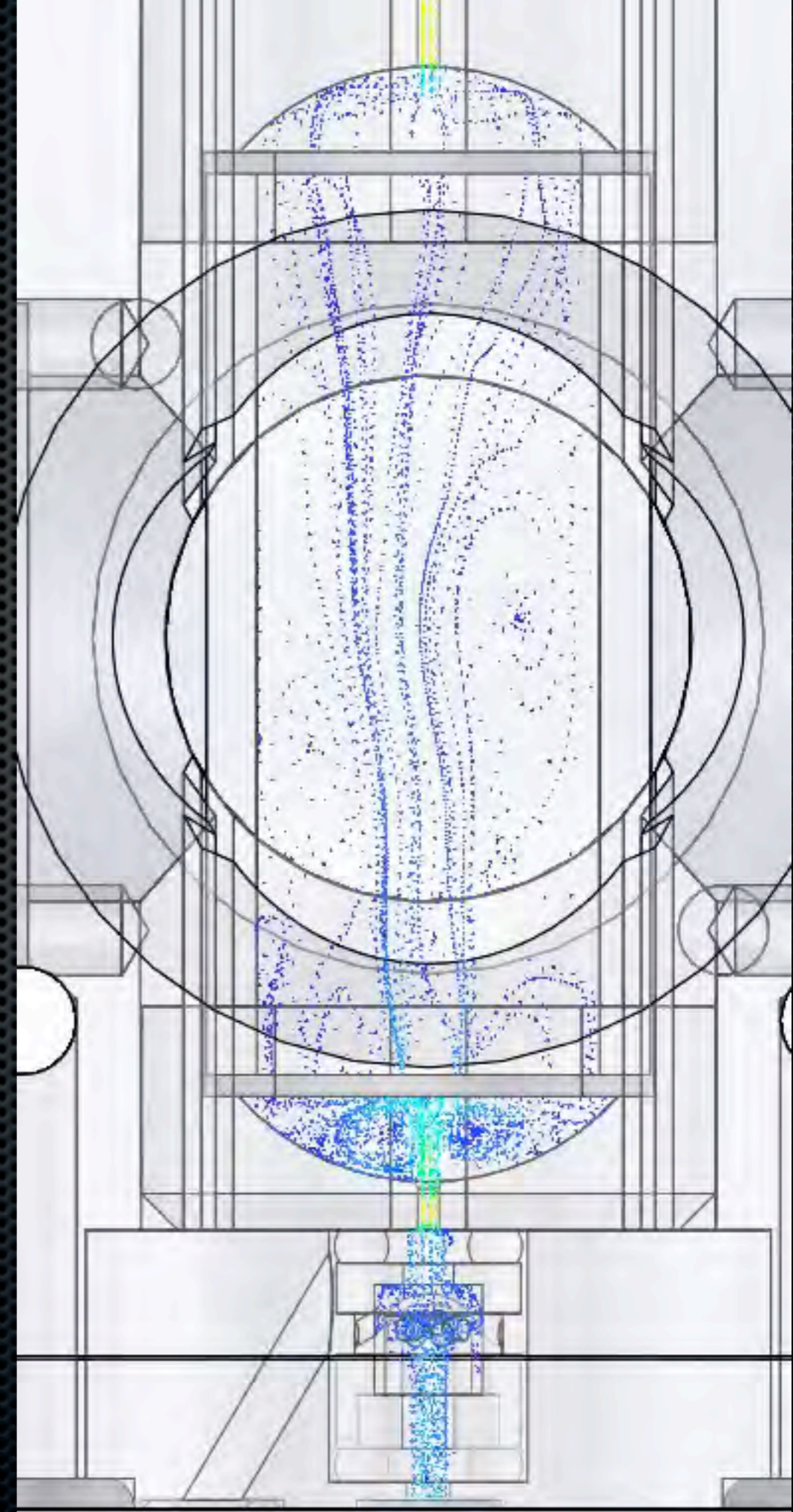
503  $\mu\text{L}$  injected at 1 mL/s



x40 real time

# Observation Heads Design ?

- ✦ Existing system:
  - ✦ 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



# Observation Head Design ?

The task is launched...

- ✦ Simulations to optimize:
  - ✦ the diameter of the injection line
  - ✦ a grid spreading the liquid over the section
- ✦ Reduce the height of the Hellma cell to reduce the required amount of sample (7 x 10 mm<sup>2</sup> beam section)
- ✦ Test 3D-printed grids ?

