

Research Log November 5, 2021

Results

1. Videos of double emulsions in X-Z plane

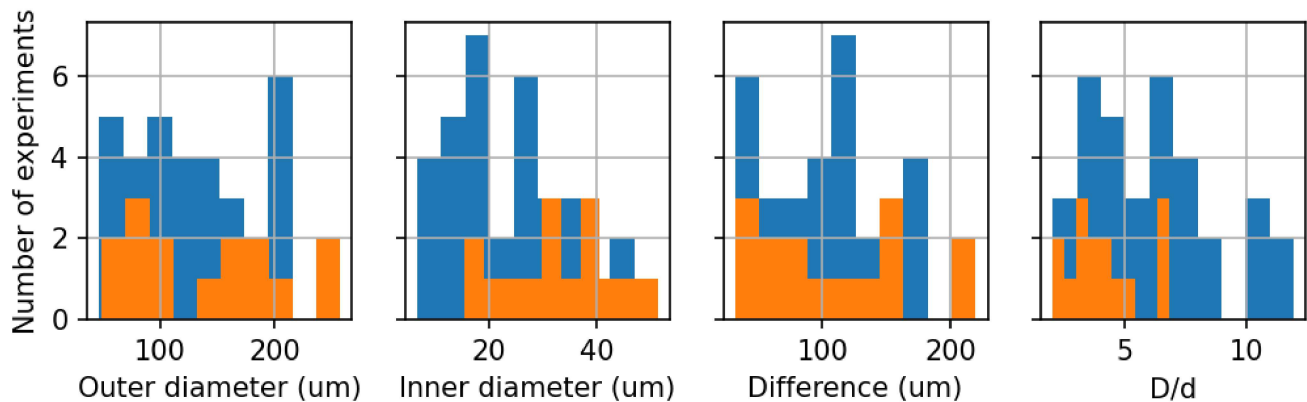
How many, distribution of inner and outer sizes

Some interesting observations

- Droplets sometimes suspend in the middle, instead of falling to the bottom [\[video\]](#)
- Inner droplets disappear after several minutes of imaging [\[video\]](#)
- A trick to produce double emulsions in microscope specimen: tapping [\[video\]](#)

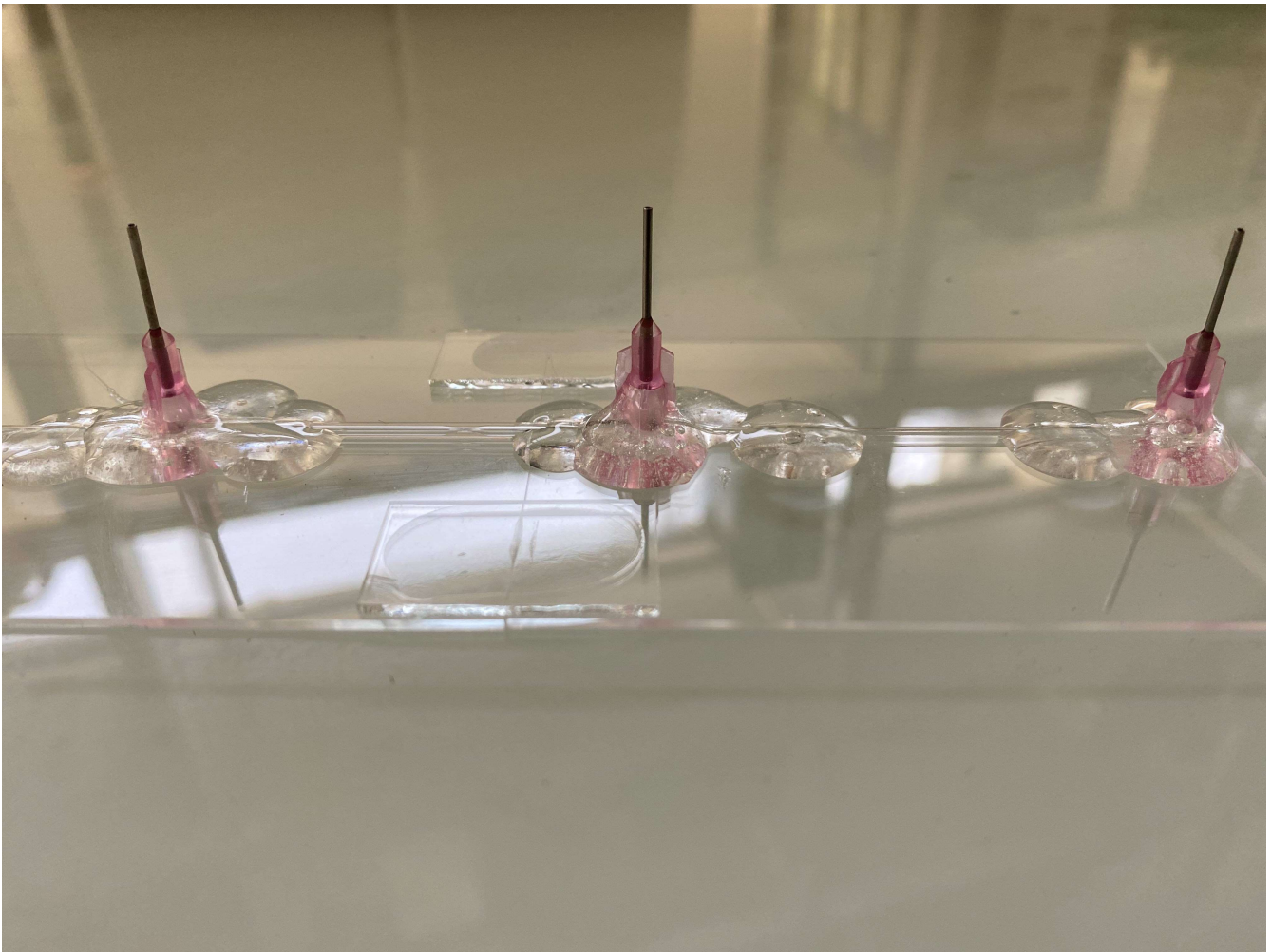
Preliminary analysis of the X-Z videos (will discuss in the meeting with slides)

Parameter space



2. Device is under development

Cut the base of syringe needles to reduce the volume inside the device. Easier to clog the device when applying glue.



Questions

1. Improve the image quality for tracking

- Fluorescent dye for oil droplets?
 - We tried **Oil Red O**. It's red without fluorescence. The contrast between inner droplets and surrounding bacteria is not improved much.
 - We tried **fluorescent bacteria** and image using only laser, the contrast is not satisfactory. [\[video\]](#)

2. Confocal disk speed limits our imaging FPS.