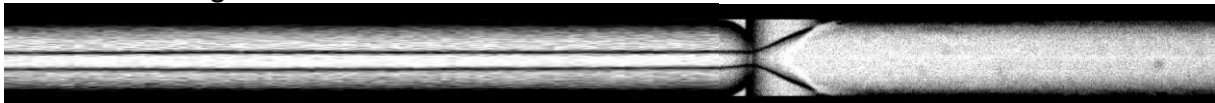


Finding the right flowrates

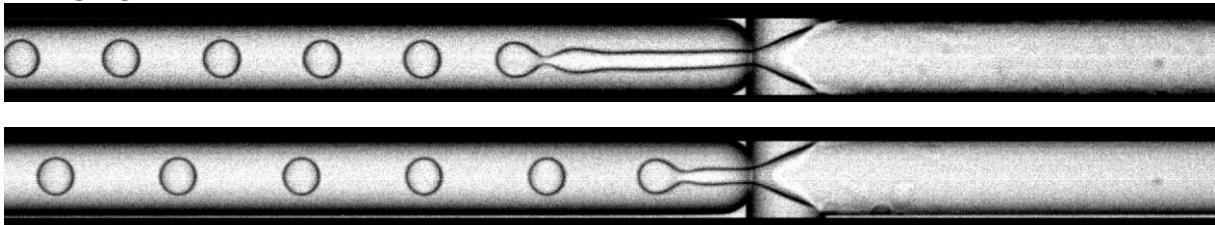
To create droplets in a droplet generator, the first step is to make sure the correct fluids are coming from the correct channels. You might need to train your eyes to distinguish between air and the used fluids. If the flow rate of one of the two fluids is too high, you might be pushing this fluid into the channel that was supposed to be the inlet of the other fluid. Also keep in mind, it might take some time for the experiment to stabilise. For example, if the initial fluid needs to travel through the tubing first.

When you have created a flow of the two liquids which seems to stable, the flowrates must be further tweaked to find a regime in which droplets are created. Below you can see the different regimes as a function of total flow rate. Most droplet generators are designed to work in the dripping regime. If you see a continuous stream of liquids, or a jet, you need to lower the total flow rate.

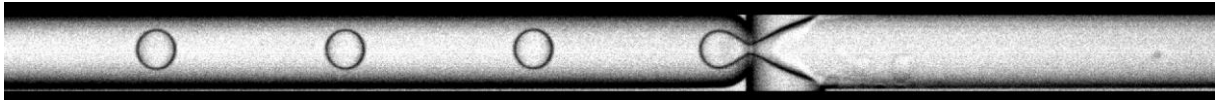
Stable co-flow regime



Jetting regime



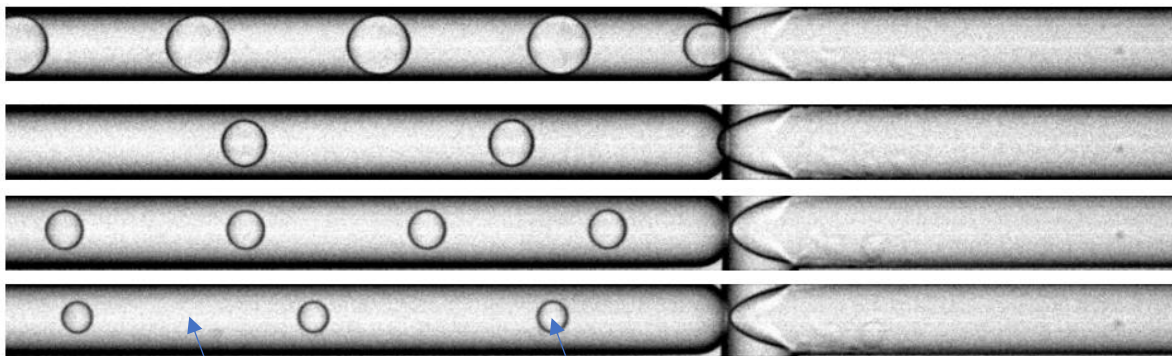
Dripping regime (this is what you want to see)



Higher flow rates ↑

Changing droplet size

Below you see one droplet generator, during one run, creating different droplet sizes. Here the ratio of the flowrates and the total flowrate have been changed to create different droplet sizes and different droplet production frequencies. The higher the dispersed flowrate compared to the continuous flow rate, the larger the droplets are. The total flowrate also influences the sizes of droplets that can be created.



Continuous phase

Dispersed phase