# 4 april

## What did we do?

* We have decided to no longer use the code that localizes the droplet in a complex image (LocateDroplet), as this requires a lot of effort to do properly and, as the set-up remains the same among different experiments, manual cropping is more effective and more precise.
* We wrote a function (FindDropletEdges) that finds the edges of a cropped droplet. This is important to scale the droplet to a width of 2 and translate the vertex of the droplet to (0,0). This function relies on screening the droplet image space in segments and then selecting the segments that contain the outermost points of the droplet, thus finding the edges.
* The function that simulates a droplet for a Bond number (MakeDroplet) is now resized as to correspond with the resizing of the droplet points. This is required for proper fitting.
* We wrote a fitter (YLFitter) that fits a set of experimental points to the Young-Laplace equation for a range (Bmin to Bmax with steps of a certain accuracy) of Bond numbers. This fitting is done by minimalizing the least distances of the experimental points to the Y-L equation simulation. The error is normalized for the number of experimental points to allow for comparison amongst different droplets.
* Iterative fitting was added to the main code, as to allow zooming on the region of best Bond numbers a few times to find a more accurate result for the Bond number.
* We added minor other improvements to and fixed minor mistakes in the code.

## What are we going to do?

* Improve the FindDropletEdges function to make it more precise. It appears as if the edges are really fitted on the outskirts of the data points, instead of in the middle. This might give a bias in fitting.
* Calculate the droplet volume (V) from the Y-L equation, calculate surface tension and Worthington number from the obtained Bond number and radius.
* Make a list of suitable liquids that we want to test our set-up with.

## Other ideas

* Flow behaviour and elasticity
* Arduino/RaPI system
* Measure surface tension of gelatin droplet while solidifying and try to relate surface tension to temperature
* Find the effect of a surfactant on surface tension of an oscillating droplet