Using the right surfactants

In short

- Add a surfactant to the continuous phase
- Base your choice of surfactant on the continuous phase

For the production of droplets in a droplet generator chip, we recommend adding a surfactant to the continuous phase. A surfactant can improve the stability of the droplets over time, and reduce the risk of droplet coalescence. The surfactant must have one side that is favoured by the continuous phase and one side that is repelled by the continuous phase. The surfactant is typically added in low concentrations of 1-5% of the volume of the continuous phase.

Examples

If you want to create oil-in-water (O/W) droplets, the continuous phase is water and therefore you can add a surfactant that is partially hydrophobic and partially hydrophilic to this water, Tween-20 for example.

If you want to create water-in-oil (W/O) droplets and your oil is a fluorinated oil like FC-40 or Novec HFE7500, you could add a surfactant to your oil that is partially fluorophilic and partially fluorophobic, like Pico-surf.