

**Bachelor/Master/Diploma thesis - experimental**

Influence of dispersed phase fraction on drop sizes and separation time

**Background:**

Liquid-liquid mixing is a fundamental process for increasing the interfacial area and mass transfer between different phases in chemical, oil, pharma and food industries. Liquid-liquid separation processes also take place after mixing process for material recovery, and separation time especially near the point of phase inversion is an important parameter we care about. A successful prediction of drop size distributions and phase separation time during the process in small-scale batch settlers can minimize the cost of designing industrial settlers.

**Aim of the thesis:**

An experimental study will be conducted in water-oil two-phase systems. A stirred tank is used to perform stirring and batch settling experiments. Drop sizes are determined using an in-situ endoscope measurement technique. The dynamic phase separation over time is monitored with an external camera. The goal is to:

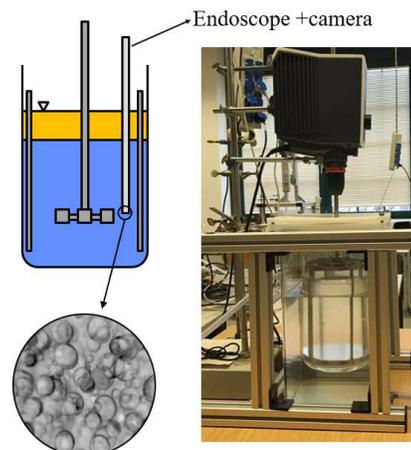
- ✚ determine the point of phase inversion
- ✚ analyze the influence of dispersed phase fraction on separation time
- ✚ make predictions of drop size and batch settling with a phase separation model
- ✚ compare prediction and experimental results

**Tasks:**

1. Literature research
2. Experiments on changing dispersed phase fraction
3. Application of a phase separation model
4. Analysis and discussion

**Start:**

Flexible

**Contact:**

M.Sc. Song Ye ([song.ye@campus.tu-berlin.de](mailto:song.ye@campus.tu-berlin.de))  
Dr.-Ing. Lena Hohl ([Lena.Hohl@tu-berlin.de](mailto:Lena.Hohl@tu-berlin.de))