

# Formulation of metal alkoxide core-shell particles with hydrophobic core through a novel route

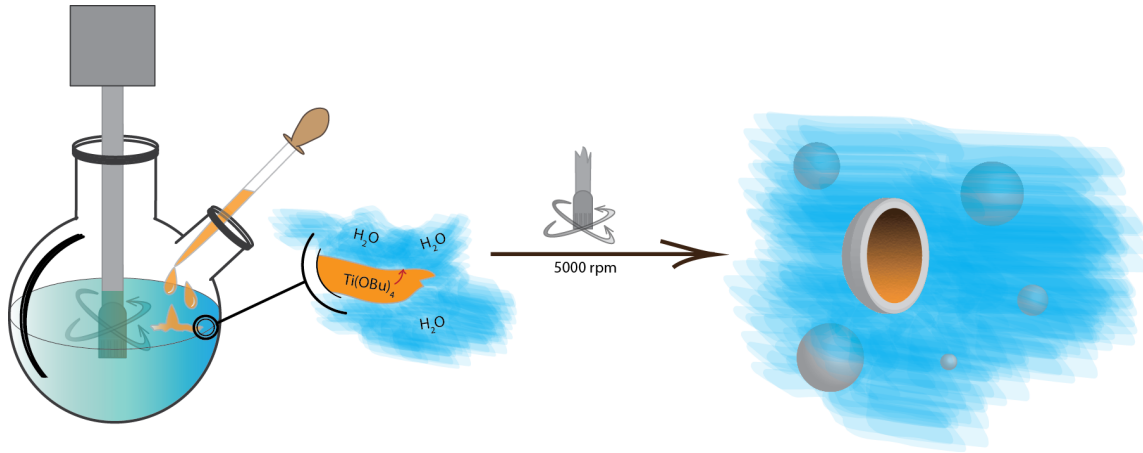


Figure 1 The novel microencapsulation process.

Microencapsulation is the technique where small (1-1000  $\mu\text{m}$ ) solid particles, liquid droplets, or gas bubbles are coated with a thin layer of coating or shell material. There are numerous setups and methodologies for how to formulate microcapsules and the methods can be divided into physical, chemical or mechanical routes, or often combinations of these. Microcapsules are of interest in several different areas such as agriculture, cosmetic, textiles, coatings, and especially the pharmaceutical industry, as containers of active substances. The desirable time span considering release of active ingredients out from the container to a surrounding medium can be immediate, triggered or long time.

In this specific project, the aim is to tune a *novel* formulation technology just presented by our group. The core-shell particles are produced in an emulsion step and parameters as shear rate, pH, temperature and the amounts of ingoing materials will affect the outcome. To visually investigate the produced microcapsules, light microscope, SEM, and NMR will be used, but also other analyze methods can be of interest. In order to analyze the release of actives from the capsules, release studies following specific setups can be done. Here, the samples are typically analyzed using UV/vis spectroscopy.

This thesis work will be performed at the Department of Chemistry and Chemical Engineering. The focus will be:

- Formulation work
- Analyzing and evaluation of the results
- Improvement of formulation recipe

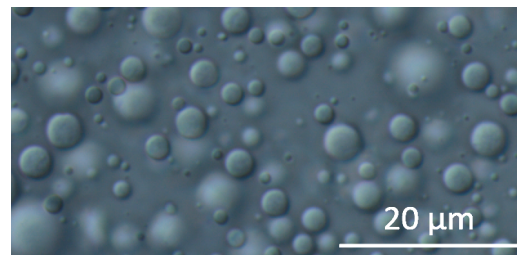


Figure 2 Produced capsules investigated using light microscopy.

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