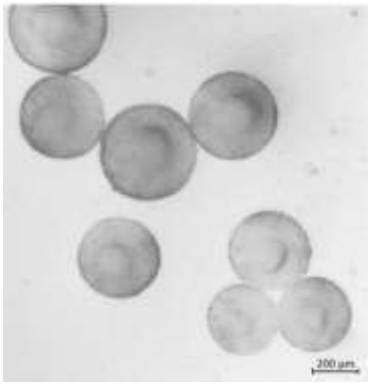
Masterarbeit

Influence of particle size and concentration on the rheological behaviour of an artificial blood substitute fluid

Background/Motivation:

Blood is a complex fluid and, due to its opaque nature, the use of optical methods to study the shear-induced orientation and deformation of blood cells is limited. Artificial blood with an artificial plasma phase and hydrogel-based microparticles representing erythrocytes was introduced to overcome this limitation. Rheological experiments have shown promising results. However, the influence of particle size and number needs to be further understood.



Scope and goal of the project:

This project will further investigate the influence of particle size on shear behaviour under relevant shear conditions. Additionally, the particle concentration within the artificial plasma phase will be gradually increased to enable a comparison of the single particle influence with the rheological behaviour of the bulk fluid. Particular emphasis will be given to the measurement artefacts due to sedimentation or wall slip, and possible solutions will be evaluated theoretically and experimentally to minimise the effects of the latter.

The master thesis project will be carried out under co-supervision between the Institute of Multiphase Processes and NETZSCH-Gerätebau GmbH.

Type of work: Experimental/theoretical

Start: Earliest possibility

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