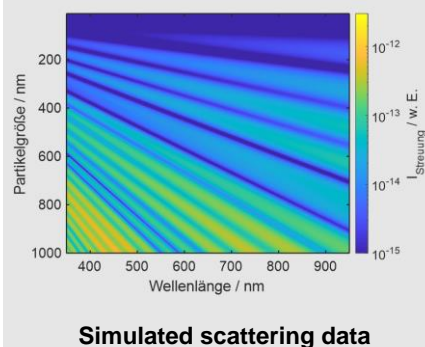
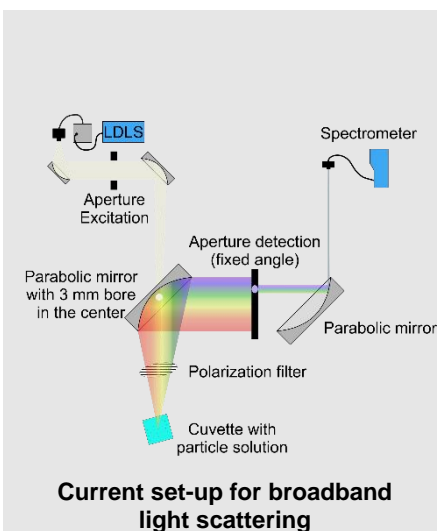


Bachelor thesis
Project thesis
Master thesis

Optimization of an optical setup for the characterization of nano-emulsions with broadband light scattering

Supervisor: Stefan Buchstaller
Starting time: May 2024
Topics: Optics, Measurement technology,
Nanoparticles, Light Scattering



One major topic of the working group "Particle Measurement Technology" at the Institute of Engineering Thermodynamics is the investigation and characterization of processes for nanoparticle production. Here, the development of new optical measurement techniques for a better understanding of the process is in the foreground.

Emulsions in the micro- and nanometer range play an essential role in many processes, for example in the food and pharmaceutical industries. Therefore, the size of the particles produced has a significant influence on the subsequent product properties, such as the flow behavior or the release rate of drugs.

In this work, a setup for broadband light scattering is to be optimized in order to extend the existing spectral measuring range. All the necessary individual parts are to be determined and then assembled. Once the measurement setup has been aligned, reference measurements are to be carried out. These should then be compared with existing measurements as well as with the theoretical measurement curves.

Students should have an interest in particle measurement technology, the construction of a new setup and be able to work independently. Basic knowledge in the above-mentioned subject areas is advantageous, but not required.

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