OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG

WORKGROUP FOR MULTIPHAS FLOWS

Collisions of viscous droplets

Grant number

SO 204/35-3

Project title

Experimental investigation and modelling of coalescence and agglomeration of fluid droplets

Project leader

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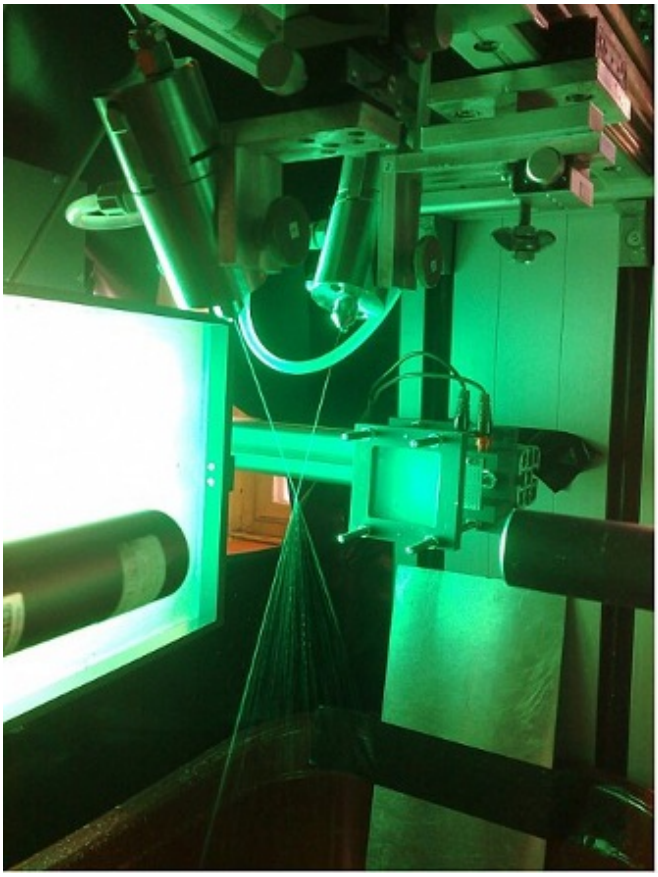
Short description of the project

The present work focuses on the investigation of binary droplet collisions consisting of solutions with different mass fraction of solids. The increase of solids content is associated with a remarkable increase in viscosity. In order to generate mono-disperse droplets two fine liquid jets are excited by means of piezo-electric generators causing a controlled break-up. The impact parame and the relative velocity included in the We-number are changed systematically. The methodical part will concentrate on a differe method to describe the tracking of the droplets to determine the relative velocity and the resulting trajectory of the colliding droplets. Mass fraction and hence viscosity have a great influence on the collision outcome and cause a shift of the impact parameter–Weber number–diagram (B–We–diagram) towards higher Weber numbers. The goal of the investigation is to achieve model which describes the collision outcome depending on global parameters as mentioned above



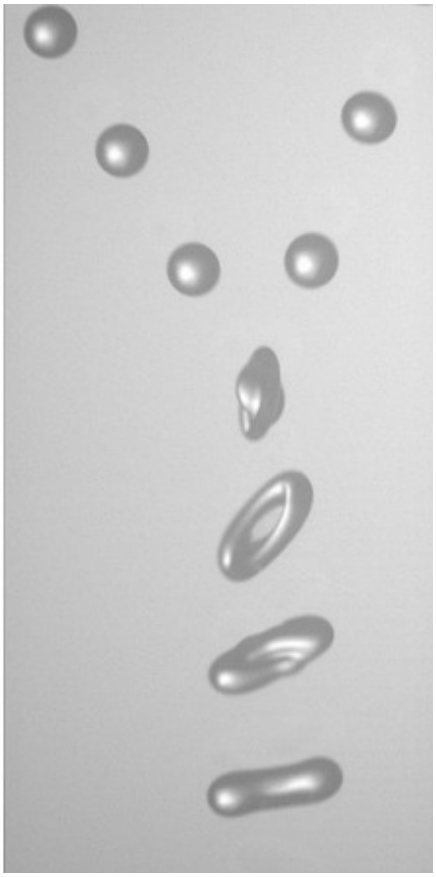


Photo: Experimental setup and droplet collision

First period report