EINLADUNG

zum Seminarvortrag von Herrn

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über

Introduction in Computational Rheometry

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INTRODUCTION IN COMPUTATIONAL RHEOMETRY

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Rheometry includes all experimental techniques used to measure the rheological properties of continuum bodies, in particular to determine the material functions of complex fluids.
The lecture is dedicated to the modelling and experimental investigations of fluids with yield stress, materials (sometimes called soft solids) which flows beyond the yield state.
The first part of the lecture is concerned with the introduction of the main rheometrical procedures to characterize complex fluids in shear and squeezing flows: (i) simple shear (strain and stress controlled) and controlled velocity squeezing; (ii) oscillatory shear (SAOS, MAOS and LAOS) and oscillatory squeezing at small amplitude, respectively.
The concept of material instability is then presented, in the context of wall depletion and apparent slip phenomena of the samples observed in the vicinity of the rheometers plates.
Numerical simulations of simple and oscillatory shear and squeezing flows are performed for generalized Newtonian models with non-monotonic flow curve in the tested geometries (plate & plate and cone & plate).
The couple between experiments and numerical simulations of the corresponding flows which take place within the rheometrical configurations defines a novel technique called *Computational Rheometry*.
The results of this procedure are able to evidence more insights about the materials flow within the gap of the rheometer and to suggest particular rheological behaviours which are difficult to be detected experimentally.