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Sedimentation von Faser-Partikel-Suspensionen

By Markus Feist

Cuvillier Verlag Aug 2012, 2012. Taschenbuch. Condition: Neu. Neuware - This dissertation describes first and fundamental studies of sedimentation processes of various fibre-particle suspensions. The settling behaviour of such suspensions is investigated experimentally and by numerical simulations under consideration of different parameters. Thus correlations were seen between academic fibre and fibre-particle suspensions and those obtained from the paper recycling industry, as well as in comparison with calculations. For the simulations the method Stokesian Dynamics has been reformulated. This method was derived with help of the Stokes equations in an exterior domain and the Newton's laws of motion for the movements of the particles. The Stokes equations are used to approximate detailed hydrodynamic forces between particles without solving the entire velocity and pressure field. Thus, it enables calculations of complete sedimentation processes and the microscopic behaviour of particles under consideration of hydrodynamic interactions and the influence of the gravity of earth. Additionally, during the derivation special interest was paid to the assumptions which have been made and their effects. After the implementation of the method, the movements of special particle configurations were investigated. The results have been compared with observations given in the literature and new experiments. Furthermore known results for some...



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