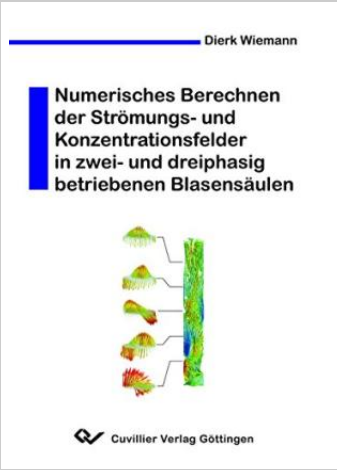

Numerisches Berechnen der Strömungs- und Konzentrationsfelder in zwei- und dreiphasig betriebenen Blasensäulen

By Dierk Wiemann

Cuvillier Verlag Nov 2005, 2005. Taschenbuch. Condition: Neu. Neuware - Bubble column reactors are widely used in chemical and biochemical industries. The multiphase flow inside the column can be a two-phase gas-liquid flow or a three-phase gasliquid- solid flow. The transport of mass and momentum between the phases is mainly influenced by the flow field and the bubble size distribution. For the dimension of bubble columns empirical correlations are usually applied, with range of applicability limited to the experimental conditions. Therefore in this work the three-dimensional, time dependent velocity and concentration fields are numerically calculated for two- and three phase bubble columns and compared to existing experimental results. In particular backmixing and mass transfer in these columns are investigated. Multiphase flow in bubble columns can be described by the so-called Eulerian model. In the proposed model the balance equations for mass and momentum are coupled with a transport equation for the mean bubble diameter. Thus the transport of mass and momentum is calculated with a dependence on the local interfacial bubble area density. In the simulations a tracer is injected into the dispersed gaseous phase and the continuous liquid phase. From the calculated three-dimensional, time-dependent concentration field of the tracer...

Reviews

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