

TRANSPORT PHENOMENA & FLUID MECHANICS

基于离散颗粒法模拟搅拌釜气含率分布

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收稿日期 2007-2-26 修回日期 网络版发布日期 接受日期 2007-9-4

摘要 The discrete particle method was used to simulate the distribution of gas holdup in a gas-liquid standard Rushton stirred tank. The gas phase was treated as a large number of bubbles and their trajectories were tracked with the results of motion equations. The two-way approach was performed to couple the interphase momentum exchange. The turbulent dispersion of bubbles with a size distribution was modeled using a stochastic tracking model, and the added mass force was involved to account for the effect of bubble acceleration on the surrounding fluid. The predicted gas holdup distribution showed that this method could give reasonable prediction comparable to the reported experimental data when the effect of turbulence was taken into account in modification for drag coefficient.

关键词 [numerical simulation](#) [gas holdup](#), [stirred tank](#), [discrete particle](#)

分类号

DOI:

Numerical simulation of gas holdup distribution in a standard Rushton stirred tank using discrete particle method

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Received 2007-2-26 Revised Online Accepted 2007-9-4

Abstract The discrete particle method was used to simulate the distribution of gas holdup in a gas-liquid standard Rushton stirred tank. The gas phase was treated as a large number of bubbles and their trajectories were tracked with the results of motion equations. The two-way approach was performed to couple the interphase momentum exchange. The turbulent dispersion of bubbles with a size distribution was modeled using a stochastic tracking model, and the added mass force was involved to account for the effect of bubble acceleration on the surrounding fluid. The predicted gas holdup distribution showed that this method could give reasonable prediction comparable to the reported experimental data when the effect of turbulence was taken into account in modification for drag coefficient.

Key words [numerical simulation](#); [gas holdup](#); [stirred tank](#); [discrete particle](#)

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