RESEARCH PAPERS

Rushton桨搅拌槽中气液两相流动的全流场数值模拟

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摘要　 The gas-liquid flow field in a stirred tank with a Rushton disk turbine, including the impeller region,was numerically simulated using the improved inner-outer iterative procedure. The characteristic features of the stirred tank, such as gas cavity and accumulation of gas at the two sides of wall baffles, can be captured by the simulation. The simulated results agree well with available experimental data. Since the improved inner-outer iterative algorithm demands no empirical formula and experimental data for the impeller region, and the approach seems generally applicable for simulating gas-liquid stirred tanks.

关键词　 stirred tank 　 gas-liquid flow 　 Rushton impeller 　 inner-outer iteration 　 numerical simulation

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Numerical Simulation of Gas-Liquid Flow in a Stirred Tank with a Rushton Impeller

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Abstract The gas-liquid flow field in a stirred tank with a Rushton disk turbine, including the impeller region,was numerically simulated using the improved inner-outer iterative procedure. The characteristic features of the stirred tank, such as gas cavity and accumulation of gas at the two sides of wall baffles, can be captured by the simulation. The simulated results agree well with available experimental data. Since the improved inner-outer iterative algorithm demands no empirical formula and experimental data for the impeller region, and the approach seems generally applicable for simulating gas-liquid stirred tanks.

Key words   stirred tank; gas-liquid flow; Rushton impeller; inner-outer iteration; numerical simulation

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