

عنوان مقاله:

CFD simulation of hydrodynamics in a split-cylindrical airlift reactor containing surfactant solution

محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

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خلاصه مقاله:

The CFD simulation of the hydrodynamics in bubbly flow in a split-cylindrical airlift reactor with surfactant solutions is performed. Four types of liquid, i.e., water and three various types of surfactants (containing Tween80, Triton X-405 and SDS) with concentration of 5 ppm were used in the experiments. The aim of this study is to show the ability of CFD to properly simulate hydrodynamic parameters in such bubbly flow. The experimental and CFD results showed that surfactants existence strongly increases gas hold-up although it decreased the liquid circulation velocity. Also, a simple empirical correlation based on dimensionless groups was developed to predict the gas hold-up in airlift reactor .with surfactant solutions. The simulation results showed a good agreement with experimental data

کلمات کلیدی:

Airlift reactor, Surfactants, Computational fluid dynamics (CFD), hydrodynamic, Bubbly flow

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