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多相流

用VOF法模拟导向立体传质塔板罩内两相流

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摘要 利用计算流体力学中的VOF方法对导向立体传质塔板（CTST-8）罩内气液两相流场进行了数值模拟,用Fluent的前处理软件gambit建立物理模型，在速度梯度大的地方采用局部加密网格，根据计算结果进行网格的自适应。用Fluent 6.1 对CTST-8在板孔气速为8.4 m/s，清液层高度为25 mm的工况下进行数值模拟。模拟结果显示了罩内流场的三维特性，并反映出罩内流场的相含率分布，速度分布以及压强分布等。将罩内压强的测量结果与模拟结果进行对比，两者吻合较好。说明本文数值模型具有较好的精度，可以用于CTST-8罩内两相流场的预测。

关键词 计算流体力学；VOF方法；两相流

分类号

Simulation of two-phase flow field in CTST-8 with VOF method

Abstract

The calculated fluid dynamics (CFD) model of the two-phase flow field in the directed trapezoid spray tray（CTST-8）was established with the volume of fluid（VOF）method. The physical model was established with the software Gambit，and the grid was adapted by the gradient of velocity. Under the condition that the gas velocity in the tray hole was kept at 8. 4 m·s-1 and clear liquid height was kept at 25 mm，calculation was carried out with commercial software FLUENT 6. 1. The results showed the three-dimensional characteristics，and displayed the detailed information of the flow field in the cover such as the distribution of phase volume fraction，velocity field，and pressure field. The pressure values in the cover and the relative liquid-liftup of a single-cover acquired by the simulation were in good agreement with the experimental results. The model had a high degree of accuracy，and could be used to predict the two-phase flow field in CTST-8.

Key words calculated fluid dynamics；volume of fluid method；two-phase flow

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