化工学报 2007 58 (11): 2764-2769 ISSN: 0438-1157 CN: 11-1946/TQ

多相流和计算流体力学

规整填料干塔压降与波纹齿角的关系

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收稿日期 2007-4-11 修回日期 2007-8-8 网络版发布日期 2007-11-7 接受日期

摘要 研究了规整填料压降和波纹齿角的关系，以期探索强化传统规整填料性能的新途径。干填料层压降可分解为3部分：气流在交叉单元碰撞所产生的压降，气流在填料层间改变方向所产生的压降以及塔壁区摩擦力所产生的压降。用计算流体力学（CFD）计算了这3部分压降。结果表明，当波纹齿角从90° 减小到20° 时，干填料层压降大幅度下降。实验数据也验证了CFD模拟计算结果。

关键词

规整填料 压降 波纹齿角 计算流体力学模拟

分类号

Relationship between channel opening angle and dry-bed pressure drop of structured packing

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Abstract

The relationship between pressure drop and channel opening angle of structured packing was studied in order to develop a new approach to intensifying the traditional structured packing.The overall dry-bed pressure drop could be divided into three different parts, which were caused, respectively, by the gas-gas collision in the crisscross junction, the direction change in the interlayer junction, and the drag near the wall zones.The computational fluid dynamics (CFD)software was used to calculate these three kinds of pressure drop.It was shown from the results that the dry-bed pressure drop could decrease significantly when the channel opening angle decreased from traditional about 90° to 20°.The CFD simulations were consistent with the experimental data.

Key words

structured packing pressure drop channel opening angle CFD simulation

DOI:

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