

过程系统工程

基于目标函数瞬时值的反应器网络综合方法

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摘要 反应器网络综合是化工过程集成的关键问题之一,但求解过程十分复杂。提出了目标函数瞬时值的概念,并研究了利用目标函数瞬时值曲线所对应的面积进行反应器网络综合的方法。以两个复杂反应为例说明了该方法的应用并和国内外文献进行了对比。从案例研究可以看出,本方法能够得到最优反应器网络,也避免了求解大规模的非线性最优化问题,也克服了可得区法维数的限制,具有几何直观的特点。

关键词

[目标函数瞬时值](#) [反应器网络综合](#) [过程集成](#)

分类号

Approach to reactor network synthesis based on instantaneous value of objective function

CHEN Qishi

Abstract

Reactor network synthesis is one of the key parts of chemical process synthesis. However, the solution procedures are very complicated. The concept of instantaneous value of objective function, and a geometrical method using the corresponding area of the curve of instantaneous value for reactor network synthesis were proposed. The application of the approach was illustrated with one case study involving complex reaction. The results were compared with the ones from references. It could be seen that the optimal reactor network could be obtained by using the approach, without solving the complicated large scale nonlinear programming problem. This approach is straightforward by using the geometrical method for reactor network synthesis.

Key words [instantaneous value of objective function](#); [reactor network synthesis](#); [process integration](#)

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