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酯化反应蒸馏过程的模型化及模拟研究

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摘要　 In this paper, a generalized model of the reactive distillation processes was developed via rate-based approach. The homotopy-continuation method was employed to solve the complicated nonlinear model equations efficiently. The simulation on the reactive distillation processes was carried out with the profiles of stage temperature,composition and flow rate for both vapor and liquid phases obtained, Based on careful analysis of the simulation results, the pitfalls in experimental design were detected. Finally, a software package for the simulation of reactive distillation processes was developed.

关键词　 process simulation　reactive distillation process　rate-based approach　homotopy-continuation method

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The Modeling and Simulation of Reactive Distillation for the Esterification Process

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Abstract

 In this paper, a generalized model of the reactive distillation processes was developed via rate-based approach. The homotopy-continuation method was employed to solve the complicated nonlinear model equations efficiently. The simulation on the reactive distillation processes was carried out with the profiles of stage temperature,composition and flow rate for both vapor and liquid phases obtained, Based on careful analysis of the simulation results, the pitfalls in experimental design were detected. Finally, a software package for the simulation of reactive distillation processes was developed.

Key words　 process simulation　reactive distillation process　rate-based approach　homotopy-continuation method

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