

عنوان مقاله:

A detailed analysis of facilitated transport in a membrane

محل انتشار:

دوازدهمین کنگره ملی مهندسی شیمی ایران (سال: 1387)

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خلاصه مقاله:

The performance of system of steady state carrier-mediated transport has been investigated. The governing system of equations consists of three boundary value differential equations which are solved with MATLAB® 7. The efficient numerical method well analyzes the system over the entire range of operation conditions in both situations of unequal and equal diffusivities, small and Large Damkohler number and also for the case of nonzero downstream permeate concentration and inconstant concentration of carrier. It was indicated that the method is very versatile and has very good convergence properties for a variety of operational conditions and systems by making minor modifications to the computer program. It was confirmed that the facilitation factors calculated by the present solving method agree with the results which had been obtained previously by numerical integration of the governing differential equations as well as experimental data (in two case studies). In the latter case, the effects of some system parameters are given, for example, binding constant, ratio of the diffusivities, etc

کلمات کلیدی:

Facilitated transport membrane, collocation, Integro-differential

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