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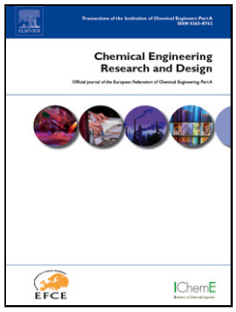

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Modeling of Purge-Gas Recovery Using Membrane Separation

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Highlights

- A multicomponent mathematical model for hydrogen recycling membrane process.
- The mathematical software MATLAB was used to solve the model.
- Effects of various parameters on the hydrogen recovery.

Abstract: In methanol synthesis, hydrogen from purge gas is commonly recycled. In order to recycle hydrogen in a methanol synthesis loop effectively, multicomponent mathematical model for a hydrogen recycling process using membrane separation is established. With the help of L'Hopital's rule, get the boundary conditions easily, which greatly simplified the calculation. The mathematical software MATLAB was used to solve the model. Various operating conditions and membrane separator parameters were considered to investigate the effects of various parameters on the hydrogen recovery. Results from the model are in good agreement with literature values. This model can therefore be used in the analysis of operating conditions for hydrogen recovery from purge gas

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