عنوان مقاله:

Hydrogen Production Study by Silica Membrane Reactor in the Methanol Steam Reforming: Modeling study

محل انتشار:

اولین همایش ملی فناوری های نوین در شیمی و مهندسی شیمی (سال: 1392)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

The main aim of this study is investigation of silica membrane reactor performance in methanol steam reforming reaction (MSR) as a first approach. Forthis purpose, a 1-dimensional, isothermal model was developed for silica MR and TR in the MSR reaction. From modeling view point, there was goodagreement between silica MR and TR modeling results and literature experimental data that maximum deviation error was about 4%. The effectof reaction temperature, feed flow rate and sweep factor on silica MR performance in terms of methanol conversion and hydrogen recovery wasanalysed by using modeling. It was concluded that methanol conversion and hydrogen recovery are generally enhanced by reaction temperature andsweep factor, while are decreased by increasing the feed flow rate. In particular, at 280 K, 0.01 ml/min, SF=5 and 2 bar, a 98.96% methanol conversion and a58.1% hydrogen recovery are obtained for silica MR. The results of lower hydrogen recovery in silica MR are related to the lower hydrogen selectivity of silicamembrane studied in this work. It was found that much higher sweep factor (>5) .effect on methanol conversion and hydrogen recovery are not considerable

کلمات کلیدی: