عنوان مقاله:

Optimization of the preparation procedure of Ni/Al2O3 catalyst for steam reforming of n-butane

محل انتشار:

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خلاصه مقاله:

Performance of Ni/Al2O3 catalysts (10 wt.% Ni) in steam reforming of n-butane was investigated in terms of n-butane conversion, selectivity to hydrogen, and hydrogen yield. The catalysts were prepared by the precipitation-sedimentation method atdifferent precipitation, drying and calcination temperatures as well as precursors. Synthesized catalysts were characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD) and BET analyses. Mathematical predictive formulas were generated for responses by Design Expert software. Also, the optimum condition of the catalyst preparation was obtained by using the response surface methodology (RSM). Ultimately, it was concluded that Ni- Nitrate as the precursor was the most favorable and the overall optimum condition were: Tprecipitation= 30°C, Tdrying= 115°C, and Tcalcination= 700°C .

کلمات کلیدی:

Ni/Al2O3 n-butane,Optimization,Steam reforming,Nano-sized catalyst,