

عنوان مقاله:

Comparison performance of ruthenium and iron catalysts in ammonia synthesis

محل انتشار:

پانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1393)

تعداد صفحات اصل مقاله: 4

نویسندگان:

Ali Jafari - Department of Applied Chemistry, Faculty of Chemistry, Semnan University, Semnan, Iran

Naghi Saadatjou - Department of Applied Chemistry, Faculty of Chemistry, Semnan University, Semnan, Iran

Saeed Sahebdehfar - National Petrochemical Company, Petrochemical Research and Technology Company, Catalyst Research Group - P.O. Box 1435114711, Tehran, Iran

خلاصه مقاله:

Promoted ruthenium catalyst supported activated carbon were prepared with impregnation of ruthenium, potassium and barium precursors on the treated activated carbon. Also, the iron catalyst were prepared by fusion of iron oxides and promoters (aluminum, calcium and potassium oxides) in an electric furnace at 1500 °C, followed by cooling, crushing and sieving. The performance and stability of ruthenium and iron catalyst were investigated in ammonia synthesis and they were compared with the commercial iron catalyst. The activity and stability tests were carried out in a fixed-bed differential reactor at T=400-450 °C, p=30bar, catalyst loading: 1 g and H₂/N₂ (3/1): 120 Nml/min. The effluent gas was analyzed by an online GC. Results showed that the activity of the Ru catalyst for ammonia synthesis was higher than the iron catalyst under the reaction conditions. The activation energy of ruthenium, iron and commercial iron catalyst was obtained 91.4, 103.88 and 108.91 KJ/mol, respectively. Moreover, the stability test revealed that ruthenium catalyst is stable as iron catalyst in higher temperature

کلمات کلیدی:

ammonia synthesis, ruthenium, iron, performance, stability, catalyst

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