عنوان مقاله:

Co-Mo bimetallic nitride catalyst for ammonia synthesis

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

تعداد صفحات اصل مقاله: 5

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خلاصه مقاله:

The main role of ammonia synthesis catalyst is to dissociate the N2 bond, because of its high bond energy. Cesiumpromoted cobalt molybdenum bimetallic nitride has a high ability of dissociation of N2 and is used as ammonia synthesis catalyst. In this paper, a new method for the preparation of Co–Mo bimetallic nitride was reported. The bimetallic nitride was prepared by a temperature-programmed reaction between bimetallic oxide precursor and the mixed gases of N2 and H2 instead of NH3. The solid oxide precursor was prepared by addition of cobalt nitrate aqueous solution to an ammonium heptamolybdate aqueous solution in equimolar amounts (Co/Mo=1) at pH 5.0. Cesium nitratewas added as a promoter. Then, the sample was heat-treated at 900 °C for 4 h. The structure studies of the cobalt molybdenum oxide by XRD technique showed that cobalt–molybdate oxide is only oxide formed and β-phase at 900 °C. Reduction of cobalt molybdenum oxide with N2–H2 gas was resulted to cobalt molybdenum nitride that confirmed by XRD technique. Activity of Co3Mo3N, Cs-Co3Mo3N and Fe-K2O-Al2O3 wrer measured in ammonia synthesis reaction (P: 30 barg, T: 400 °C and H2/N2:3/1 with flow rate 150 ml/min).

کلمات کلیدی:

ammonia synthesis; cobalt molybdenum nitride; XRD