

Characterization of bismuth oxide catalysts prepared from bismuth trinitrate pentahydrate: influence of bismuth concentration

ABSTRACT

Bi₂O₃ catalysts have been prepared via precipitation method by using Bi(NO₃)₃·5H₂O as a starting material and NaOH as the precipitating agent. The influence of bismuth concentration on the formation of Bi₂O₃ nanocrystals was investigated by using XRD, BET, FTIR, SEM and H₂-TPR. Low bismuth concentration, resulted in high surface area material with small size crystallite (not, vert, similar 36 nm). It also enhanced the oxide reducibility with high reduction activity. XRD patterns of all the samples display pure α -Bi₂O₃ phase. The SEM images showed the nanostructure of Bi₂O₃ were non-agglomerated needles.

Keyword: Bi₂O₃ catalyst, Precipitation, Bismuth concentration, Nanocrystals