World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:10, No:08, 2016

The Catalytic Properties of PtSn/Al2O3 for Acetic Acid Hydrogenation

Authors : Mingchuan Zhou, Haitao Zhang, Hongfang Ma, Weiyong Ying

Abstract : Alumina supported platinum and tin catalysts with different loadings of Pt and Sn were prepared and characterized by low temperature N₂ adsorption/desorption, H₂-temperature programed reduction and CO pulse chemisorption. Pt and Sn below 1% loading were suitable for acetic acid hydrogenation. The best performance over 0.75Pt1Sn/Al₂O₃ can reach 87.55% conversion of acetic acid and 47.39% selectivity of ethanol. The operating conditions of acetic acid hydrogenation over 1Pt1Sn/Al₂O₃ were investigated. High reaction temperature can enhance the conversion of acetic acid, but it decreased total selectivity of ethanol and acetyl acetate. High pressure and low weight hourly space velocity were beneficial to both conversion of acetic acid and selectivity to ethanol.

Keywords : acetic acid, hydrogenation, operating condition, PtSn
Conference Title : ICCENS 2016 : International Conference on Chemical Engineering and Nanoparticle Synthesis
Conference Location : Paris, France
Conference Dates : August 22-23, 2016