

## The Catalytic Properties of PtSn/Al<sub>2</sub>O<sub>3</sub> 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 N<sub>2</sub> adsorption/desorption, H<sub>2</sub>-temperature programmed reduction and CO pulse chemisorption. Pt and Sn below 1% loading were suitable for acetic acid hydrogenation. The best performance over 0.75Pt1Sn/Al<sub>2</sub>O<sub>3</sub> can reach 87.55% conversion of acetic acid and 47.39% selectivity of ethanol. The operating conditions of acetic acid hydrogenation over 1Pt1Sn/Al<sub>2</sub>O<sub>3</sub> 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