

Catalytic Hydrogenation of biomass-derived organic acids into their corresponding alcohols

김성민¹, 이미은^{1,2}, 최재욱¹, 서동진¹, 서영웅^{1,*}

¹KIST; ²서울시립대

(ywsuh@kist.re.kr*)

Because of a higher energy ratio in indirect fermentation of sugar than the conventional one to produce bio-alcohols, the interest of this process has been increased in recent years. In the course of this process, several organic acids including hexanoic acid and butyric acid were recovered. A direct hydrogenation of these acids into their corresponding alcohols would be desired. The reaction was conducted in a fixed-bed reactor by varying the pressure of hydrogen, the temperature, the molar ratio of hydrogen to acid and the molar ratio of acid to water. In this study, organic acids were hydrogenated over a commercial catalysts. Over catalysts, major products, that is, alcohols as well as ester byproducts were produced directly from acids, where the hydrogenation of acids, the esterification of acids with alcohols and the hydrogenolysis of esters occur simultaneously. It was observed that the selectivities of alcohols and esters were influenced by not only the presence of water in the liquid phase but the pressure of hydrogen and the temperature.