Asymmetric hydrogenation of methyl acetoacetate over modified nickel catalysts

조동현, 이재성, 이경희*
포항공과대학교
(kyunglee@postech.ac.kr*)

Enantio-differentiating hydrogenation of methyl acetoacetate was performed over the supported nickel catalysts modified by the solution of (R,R)-tartaric acid and NaBr. The preparation condition of supported nickel and the modification condition of the nickel catalysts affected the optical yield of the obtained product, methyl 3-hydroxybutyrate. The preparation method of supported nickel was important factor determining the activity and enantioselectivity of catalysts. The impregnated samples on aluminum oxide or silica have similar activity and enantioselectivity in the asymmetric hydrogenation of methyl acetoacetate, but the precipitated nickel on silica has different from that of aluminum oxide. In the procedure of homogeneous precipitation deposition of nickel on silica, the phase of nickel hydrosilicate is formed. This phase is an amorphous phase which is very difficult to reduce, and shows low activity and enantioselectivity for asymmetric hydrogenation.